
MISSOURI BUSINESS COUNCIL / DEPARTMENT OF ECONOMIC DEVELOPMENT

A STRATEGIC ACTION PLAN FOR MISSOURI

DRAFT FOR DISCUSSION

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TABLE OF CONTENTS

1.0	THINKING ABOUT MISSOURI STRATEGIC ACTION	I-1
1.1	Introduction	I-1
1.2	Missouri's Place in the World	I-3
1.2.1	The Missouri Economy: A Balloon With a Slow Leak	I-3
1.2.2	The Emergence of High Performance Economies & Enterprises Throughout the World	I-4
1.2.3	Strategic Action to Create High-Performance Missouri Firms, Workers and Communities	I-5
1.3	Global Competition Requires High-Performance Missouri Technology	I-5
1.4	Global Competition Requires High-Performance Missouri Financial Resources	I-6
1.5	Global Competition Requires High-Performance Missouri Workers	I-7
1.6	Global Competition Requires High-Performance Missouri Infrastructure	I-8
1.7	Global Competition Requires High-Performance Missouri Marketing	I-10
1.8	The High Cost of Competitiveness: The Need for Community Development	I-10
1.9	Managing Missouri's Economic Development	I-10
2.0	Missouri's Global Economic Advantages	II-1
2.1	Missouri's Comparative Advantages	II-1
2.2	Missouri's Manufacturing Base	II-4
2.2.1	Composition of the Manufacturing Base	II-4
2.2.2	Targeting Missouri's Winning Industries: Potentials and Challenges of Missouri's Manufacturing Base	II-5
2.3	Missouri's Agriculture and Food Industry Base	II-13
2.4	Missouri's Export Service Industry	II-15
2.5	Missouri's Tourism, Retirement and Entertainment Base	II-17
2.6	Missouri's Rural Communities and Businesses	II-18
2.7	Missouri's Distinct Economic Regions	II-19

Table of Contents (Cont'd)

3.0 STRATEGIC ACTION TO IMPROVE MISSOURI'S INNOVATION, BUSINESS MODERNIZATION AND TECHNOLOGY RESOURCES	III-1
3.1 The Market For Innovation, Business Modernization and Technology Resources In Missouri	III-1
3.1.1 Mission	III-8
3.1.2 Performance Goals	III-9
3.1.3 Strategic Actions	III-10
3.1.4 Organizational Structure	III-10
3.1.5 Financial Structure	III-11
3.1.6 Strategic Action Steps	III-12
3.2 Business Modernization & Technology Application	III-14
3.2.1 Organizational Structure	III-14
3.2.2 Financial Structure	III-16
3.2.3 Strategic Action Steps	III-16
3.3 Technology Commercialization	III-18
3.3.1 Organizational Structure	III-18
3.3.2 Financial Structure	III-19
3.3.3 Strategic Action Steps	III-19
3.4 Technology Development	III-21
3.4.1 Organizational Structure	III-21
3.4.2 Financial Structure	III-22
3.4.3 Strategic Action Steps	III-22
4.0 STRATEGIC ACTION FOR IMPROVING MISSOURI'S FINANCIAL CAPITAL RESOURCES	IV-1
4.1 The Market Need for Financial Capital in Missouri	IV-1
4.1.1 Mission	IV-3
4.1.2 Performance Goals	IV-4
4.1.3 Strategic Actions	IV-5
4.1.4 Organizational Structure	IV-5
4.2 Missouri Seed Capital Fund – Seed and Early-Stage Venture Capital	IV-6
4.2.1 Organizational Structure	IV-7
4.2.2 Financial Structure	IV-7
4.2.3 Strategic Action Steps	IV-7
4.3 The Missouri Venture Capital Fund of Funds -- Later-Stage Venture Capital	IV-8
4.3.1 Organizational Structure	IV-8
4.3.2 Financial Structure	IV-9
4.3.3 Strategic Action Steps	IV-9

Table of Contents (Cont'd)

4.4	Near-Equity and Subordinated Debt	IV-10
4.5	The Missouri Development Bank-- Long Term Debt	IV-10
4.5.1	Organizational Structure	IV-11
4.5.2	Financial Structure	IV-12
4.5.3	Strategic Action Steps	IV-13
4.6	Commercial Loans for Small Enterprises	IV-13
5.0	STRATEGIC ACTION TO IMPROVE MISSOURI'S WORK FORCE	V-1
5.1	The Market Demands that Shape the Evolution of Human Resources in Missouri	V-1
5.1.1	Change in Employers	V-2
5.1.2	Change in Educators	V-3
5.1.3	Change in the Public Sector	V-6
5.2	Human Resources: Mission	V-8
5.3	Human Resources: Performance Goals	V-9
5.4	Human Resources: Strategic Actions	V-9
5.4.1	Developing a World-Class Basic Education System	V-10
5.4.2	Developing an Effective System of School-to-Work Transition	V-10
5.4.3	Developing a Market-Driven Adult Training System	V-11
5.4.4	Developing Missouri Firms as High-Performance Work Organizations	V-12
5.5	Human Resources: Organizational Structure	V-13
5.6	Human Resources: Strategic Goals -- 1994	V-14
6.0	STRATEGIC ACTION TO IMPROVE MISSOURI'S INFRASTRUCTURE RESOURCES	VI-1
6.1	Missouri's Infrastructure Must Become Part of the Economic Development Process	VI-1
6.1.1	Missourians Need to Share an Overall Long-Term Agreement on Priorities	VI-3
6.1.2	Missouri Needs to Recognize the Importance of State-of-the-Art Telecommunications	VI-5
6.1.3	Missouri Needs to Have the Financial Tools to Finance Infrastructure	VI-6
6.2	Mission	VI-6
6.3	Performance Goals	VI-7
6.4	Organizational Structure	VI-7
6.5	Financial Structure	VI-8
6.6	Strategic Action Steps	VI-8

Table of Contents (Cont'd)

7.0 THE HIGH COST OF COMPETITIVENESS: THE NEED FOR COMMUNITY DEVELOPMENT	
8.0 STRATEGIC ACTION TO IMPROVE MISSOURI'S MARKETING STRATEGY	
9.0 STRATEGIC ACTION TO MANAGE MISSOURI'S ECONOMIC DEVELOPMENT	IX-1
9.1 Missouri Department of Economic Development	IX-2
9.1.1 Mission	IX-3
9.1.2 Objectives	IX-3
9.1.3 Business Plan and Management Structure	IX-4
9.1.4 Program Budget and Financial Structure	IX-6
9.2 A Public/Private Partnership	IX-7
9.2.1 First Step: Working Groups	IX-8
9.2.2 Step 2: Specialized Public/Private Partnerships	IX-9
9.2.3 Step 3: Umbrella Partnership	IX-9

Section

1

1.0 THINKING ABOUT MISSOURI STRATEGIC ACTION

The state of Missouri stands at the brink of opportunity or danger. Missouri has the power to position itself as a fierce competitor geared to the demands of a 21st century economy, or face an uncertain future.

Some years ago, the editorialist of the St. Louis Post-Dispatch, Irving Dilliard, wrote "*Missouri is all America in one Place.*" In fact, for many years, Missouri grew and prospered with a strength and diversity that mirrored that of the United States. Missouri successfully developed its agriculture and a strong and diversified manufacturing base in its principal cities and many rural areas. Supported by superb central location, the Missouri and Mississippi Rivers, and an excellent road, rail and air transportation system, Missouri became one of the largest distribution centers in the nation.

Now, once again, Missouri mirrors the United States in facing a powerful global competition that impacts every Missourian in every Missouri town, every day of the year. The fundamental question raised by this report is whether Missourians will simply drift with the ebbs and flows of the global economy, or choose to recapture the spirit that made Missouri the launching pad for the development of the entire Western Frontier.

This Strategic Action Plan begins to set out Missouri's place in this global economy, and begins to outline strategic actions that Missourians can take in partnership with each other to build a stronger, more vigorous economy that creates measurable new wealth and good jobs for Missourians from the 1990s into the next century.

This Strategic Action Plan is based on a clear truth learned in every other state and nation where strategic action has taken deep roots to create wealth and jobs: Successful strategic action in today's global economy is as much a process as a product.

If this Strategic Action Plan is to be successful, Missourians must:

- o Share a common vision;
- o Agree on clear performance goals which lead to measurable wealth and job creation;
- o Hold managers accountable for performance;
- o Commit substantial resources to make a significant measurable private and public impact over time; and
- o Adopt a system of accountability which leads to constant incremental improvement in quality, productivity and profitability for Missouri firms, workers and communities.

Each of these Strategic Action verbs calls for a Strategic Action Process.

1.1 Introduction

When we first met with the Business Council on July 14, 1993, we outlined a six step process to achieve a successful Missouri Strategic Action Plan. These six steps are: (1) Undertake Market Research, (2) Adopt a Mission Statement, (3) Establish Performance Goals, (4) Define specific Strategic Actions, (5) Implement appropriate Legal, Financial and Management Structures to carry out the Strategic Actions, and

(6) Develop a simple Report Card that provides constant feedback and leads to continuous incremental improvement.

o First -- Undertake Market Research.

The Market Research Report, the surveys, and the focus groups broadened the original four areas requiring strategic action (technology, financial capital, work force, and infrastructure) to the seven areas listed below. The Business Council has approved these seven areas for inclusion in the Strategic Action Plan:

- o Technology
- o Financial Capital
- o Work force
- o Infrastructure
- o Marketing
- o Community Development
- o Management of Economic Development

o Second -- Draft a Mission Statement which meets the identified market needs.

The Business Council adopted the following mission statement in the Spring of 1993:

“The mission of the Missouri Business Council is to create quality jobs in a healthy environment.”

This is now the Mission for this Strategic Action Plan.

o Third -- Set Clear Measurable Performance Goals (outputs, not inputs) to carry out the Mission.

Based on the Market Research, the Business Council has adopted the following three basic Performance Goals to carry out its Mission:

- 1) Achieve employment growth for Missourians in economic base industries higher than the national average;
- 2) Achieve per capita personal income growth for Missourians higher than the national average; and
- 3) Achieve gross state product growth for Missouri higher than the national average.

o Fourth -- Define a detailed set of Strategic Actions to carry out the Mission and achieve the Performance Goals.

This Strategic Action Plan proposes specific strategic actions to be undertaken, including key actions to be implemented in 1994. Each strategic action proposed in this Summary includes a draft mission,

performance goals, strategic actions, organizational structure, financing, and steps to implement the Strategic Action Plan.

This Missouri Strategic Action Plan can only succeed if a careful process is now put in place to provide for widespread understanding, ownership, modification, revision, and, finally, adoption by Missourians. A Strategic Action Plan which is not owned by Missouri leaders in both the private and public sectors, and at both the local and state levels, will end up as just another one of many reports on a shelf. A Missouri Strategic Action Plan which is owned by Missourians will create wealth and jobs long after we are gone. Many Missouri private and public sector leaders in organizations throughout the state are now expressing deep interest in this Strategic Action Plan, but that energy must become a part of a long-term, careful Strategic Action Process if this initiative is to be successful. That is the hallmark of success in other states. This is a start in that process.

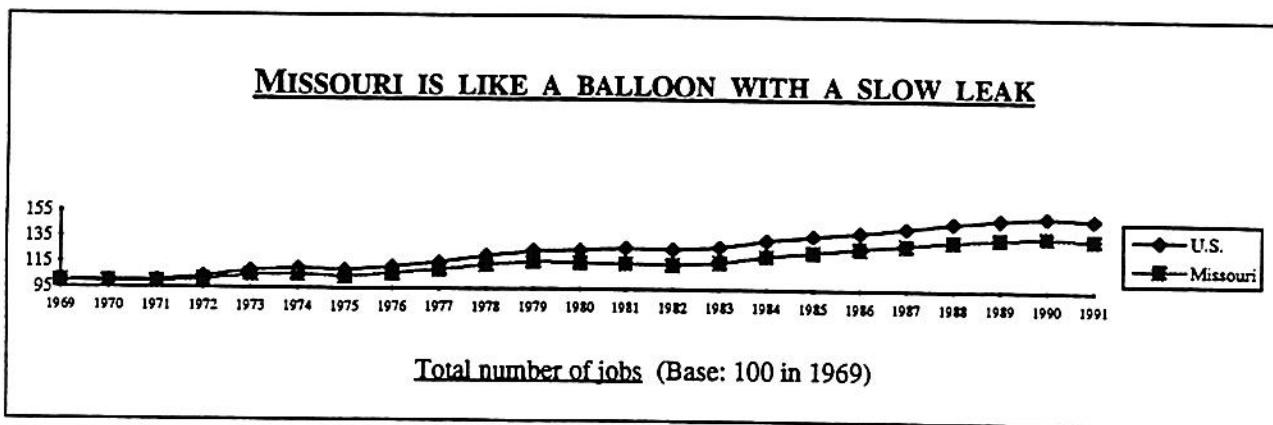
1.2 Missouri's Place in the World

1.2.1 The Missouri Economy: A Balloon With A Slow Leak

Today, Missouri's overall economic performance is just average by national standards and slightly above average by regional standards.

- Missouri's population growth in the decade from 1982 to 1992 was only slightly more than half the national average (5.4 % for Missouri, 10.1% for the nation), even though it was the second fastest growing state in the region behind Tennessee.
- Missouri's personal income in the same decade increased by an average of only 1.75% per year, slightly above the national average (1.61% per year) and faster than other leading states in the region (Illinois and Kansas).

This good news masks serious long-term global competition threatening Missouri. As the global economy is undergoing radical and rapid structural change, Missouri is slowly falling behind. Since the emergence of the Information Age during the 1970s, Missouri has been progressively falling behind the nation's job creating capacity.



Yet these facts tell only a part of the story. Missouri's competition is global, not national. Profound economic and technological changes have moved the entire world out of the Industrial Age into the Information Age, and created powerful global competitors for Missouri firms, workers and communities. As a result of these changes, Missouri's traditional competitive advantages -- its natural agricultural

resources, its industrious people, its diversified manufacturing base, and its location -- are no longer sufficient by themselves to ensure prosperity. Like every other state and nation, these changes require Missourians to reconsider how they think about economic development.

1.2.2 The Emergence of High-Performance Economies and Enterprises Throughout the World

During the 1960s and 1970s, new manufacturing and agricultural capacity was created in both industrialized and newly-developing countries. Japan and Western Europe, hindered through the 1950s by the reconstruction necessary after World War II, emerged with a whole new production capacity. In the mid-1970s, both nations started challenging the so-far undisputed U.S. technological leadership with firms whose names -- Airbus, Sony, Toshiba and TGV (the French bullet train that outspeeds and outperforms the Japanese) -- are now household names with the American public.

In the 1980s, developing nations began to demonstrate their high-quality manufacturing capacity, from Mexico to Korea, Taiwan, Singapore and Hong Kong, and now, all of East Asia. These new and expanding competitors in textiles, apparel, leather goods, electronics and a host of other products, radically changed international markets because their costs are so much less than U.S. firms, and because their small domestic markets compel them to sell their expanding capacity abroad -- especially in the largest market, the United States.

In the 1990s, as a result of these new high-performance firms and their global manufacturing and export capacity, Thailand, Indonesia, Malaysia and India are fast replacing Asia's four tigers of the 1980s as the Pacific Rim's fastest growing economies. Chile and Argentina are setting a fast pace in the Western Hemisphere, and even Poland is becoming a significant exporter. China has become the fastest growing economy in the world -- doubling in size every eight years, and likely to have a gross national product equal to the United States by the year 2000 -- just six years from now. High-performance firms are now everywhere. All of these emerging competitors have a single common market advantage over Missouri or any of the United States -- They have a cost cushion to invest in high-performance techniques which North America and Western Europe do not.

As a result of these high-performance firms in every point of the globe, many older, inefficient producers in shoes, apparel and other historic industries have closed or been driven out of many small Missouri towns.

1.2.3 Strategic Action to Create High-Performance Missouri Firms, Workers and Communities

High-performance firms -- whether they are located in Mexico or Missouri -- have the same essential qualities. They must have:

- 1) the willingness to invest in their work force;
- 2) the ability to innovate and access globally competitive technology;
- 3) the capacity to access capital at an appropriate rate and term to employ innovation and a quality work force;
- 4) the capacity to access all appropriate forms of infrastructure -- air, highway, rail, water, and telecommunications necessary to produce and to market;

- 5) the marketing capacity to pinpoint their customers on a global basis, to receive constant electronic feedback on their customers' needs, and to respond to those needs nimbly; and
- 6) a supportive economic and political environment which encourages firms, workers and communities to constantly update the quality, productivity and profitability of their enterprises in the face of a constantly changing technological economy.

The heart of this Missouri Strategic Action Plan must be to provide the resources needed to support the growth and development of high-performance Missouri enterprises. High-performance firms require access to high-performance workers, technology, financial capital, infrastructure, and marketing -- all provided in a political and economic environment which is constantly improving the quality of these resources and removing barriers. Each of these six key resources are summarized below.

1.3 Global Competition Requires High-Performance Missouri Technology

The development of the microchip created the foundation for an explosive range of other technologies, starting with computers and telecommunications equipment. These information technologies fundamentally altered the way work is done in all industries, including agriculture, tourism, manufacturing and a wide range of service industries. Robotics, computer-aided design and manufacturing, computer numerically controlled machine tools and statistical process controls change the way all firms have to compete, and push the quality standards from one reject in 1,000 to one in 1,000,000.

Global technology is changing global competition. Bangalore, India is no longer a cheap producer of cheap goods, but one of the three or four major software capitals of the world -- home to such household names as Dell, Lotus, Sun, Microsoft, and Hewlett Packard.

Missouri's agribusiness, pharmaceutical, chemical, aerospace, and telecommunications firms and its universities create a reservoir of research and potential investment grade technology. This potential could be commercialized in new products and firms. However, the Market Research indicates that Missouri's performance in terms of (1) the application of high-performance management techniques and technology to existing manufacturing firms and (2) the incubation of new firms is far from satisfactory.

- o The opportunities for technology commercialization are great if Missouri's private, public and university sectors can agree on a mechanism which is unique to Missouri's needs, but is market-driven, performance-based and sustained on a long-term basis, using the most successful experience from other jurisdictions.
- o Missouri also has great opportunities to apply high-performance management techniques and existing technology to thousands of small and medium-sized, agricultural-based and manufacturing firms. Missouri's total food industry, for instance, represents nearly 11% of Missouri's manufacturing jobs. Many of these small food processing and other manufacturing firms can substantially increase their quality, productivity and profitability, if they have ready access to performance-based business modernization and technology application resources. By rough estimate, 85% of Missouri's 8,000 manufacturing firms need basic business modernization services now; probably only 15% are able to use sophisticated technology application resources. The task of this Strategic Action effort is to attend to all of these real needs now, and move more Missouri firms to high-performance capacity.

Missouri's logical step is to build on the Missouri Business Modernization and Technology Corporation to create an umbrella technology and innovation system. The Corporation will develop programs to fit Missouri's special opportunities and resources, and will be based upon the best proven experience of other states in establishing market-driven, performance-based institutions which are capable of leveraging substantial private, federal and university resources.

We propose that the Missouri Business Modernization and Technology Corporation develop three strategic actions:

- o Business Modernization & Technology Application: Create a mechanism that improves manufacturers' access to expertise in management and technology. This mechanism will build on those proven institutions which have a track record for delivering results and are likely to generate new federal resources in Missouri in 1994. The management of this structure will be a small, lean organization which uses coordination, communication and leadership among existing market-driven private, public and academic business and technological service providers across Missouri to fulfill its mission.
- o Technology Commercialization: Create a mechanism that will move technologies from the universities, public and private laboratories into the market place. This could be done by establishing technology commercialization corporations in 1994 and by establishing a rigorous set of performance goals for the existing Innovation Centers.
- o Technology Development: Create a fund that will invest in applied research projects developed by university/industry partnerships in 1995. These projects should have the potential to generate a stream of investment-grade technologies of strategic importance to the Missouri economy.

Beginning working groups of private, public and university leaders are being identified which are committed to these three strategic action areas.

1.4 Global Competition Requires High-Performance Missouri Financial Resources

New global competitors, new technologies and new work force skills require new financing. Missouri firms need access to seed and early-stage venture capital to birth new products, subordinated debt and mezzanine capital to convert mature firms with mature products into global competitors, and access to long-term debt for growing small and medium-sized firms from publicly traded markets on the same terms as Fortune 500 companies.

The Market Research Report underlines the basic strength of Missouri's banking system and the emergence of a viable venture capital industry. Missouri, however, lacks sufficient sources of five key types of financial capital -- (1) seed and early-stage venture capital; (2) increased institutional investment in more conventional venture capital; (3) mezzanine capital for the expansion of small and medium-sized enterprises; (4) low-cost, long-term fixed asset financing for small and medium-sized enterprises, as well as infrastructure at a scale equivalent to other states; and (5) improved access to commercial loans for small enterprises, especially in smaller communities.

Missouri's logical step is to create a corporation which is a partnership of the private and public sectors to build mechanisms to bridge existing gaps in financial capital and to leverage significant private sector investment. This initiative would have responsibility for overseeing four specific strategic actions:

- o Seed and Early-Stage Venture Capital: The Market Research shows that there exists a real opportunity to foster the creation of technology-based firms in Missouri if a seed and early-stage venture capital initiative is developed to complement the technology commercialization strategic action. A seed capital fund would need to reach at least \$30 million and would have high management costs. These high management costs may need to be initially covered by private foundation and public sector investment, and may be recoverable through royalties or a portion of the carried interest. An informal working group has emerged (including senior leadership from Missouri's principal population centers) with a strong common interest in creating one or more seed capital funds in Missouri in 1994. The investment of public dollars in such a seed capital fund could be legislated in 1994.
- o Venture Capital: A multi-million dollar pool of venture capital partnerships could be developed and financed by large private and public sector institutional investors based on the highest fiduciary standards of the market place. This pool could substantially increase the availability of venture capital to high growth Missouri firms which meet the standards of the market place.
- o Long-Term Debt: A Development Bank could be developed by building on the experience of the Missouri Economic Development Export and Infrastructure Board (MEDEIB) to help small and medium-sized manufacturers access long-term financing at favorable terms. This Development Bank would be developed in partnership with Missouri private banks and with existing public finance institutions. The creation of the Development Bank can be legislated when agreement has been reached with these private and public partners.
- o Small Loan Financing: A specific program can be developed to target small businesses which cannot access any of the sources of financing addressed above. This program builds on emerging Missouri private and public initiatives designed to have a community development impact in partnership with Missouri private banks. It will build on three existing instruments: (1) the Missouri First program which might be modified in partnership with the Treasurer to create greater flexibility to meet legitimate private sector needs; (2) Bank Community Development Corporations (CDC) which help banks meet Community Reinvestment Act requirements; and (3) a number of micro-business lending programs in Missouri.

1.5 Global Competition Requires High-Performance Missouri Workers

Missouri's economy is nothing more or less than the sum total of the energy, imagination and resourcefulness of all of its people and the communities in which they live. To the extent that any individual in Missouri is not engaged in a livelihood that realizes his or her potential full capacity, the Missouri economy is less.

Missouri's competition, no longer to be found only in neighboring states, now spans the European markets as well as those of the Pacific Rim. The competition is fierce, and one way for Missouri to stay abreast or move ahead of its competition is to support the creation and maintenance of firms that are high value-added, globally competitive and profitable. One of the keys to establishing these types of firms is a highly-qualified Missouri work force. Therefore, as the demands of a global economy require firms to adopt the philosophies of a high-performance work organization, the Missouri work force is required to perform better, which means the training and educational agencies must perform better.

Missouri's work force has remained relatively unchanged, continuing to focus on the labor-intensive skills once crucial in the past instead of providing workers with the new training they need -- basic skills in the areas of communication, setting and meeting priorities, group effectiveness, problem-solving and

leadership. So, how does Missouri's work force catch up? The solution lies in a three-pronged process that looks to (1) Employers, (2) Educators, and (3) the Public Sector. All three must change and work in tandem with one another to create a Missouri work force pool that is highly skilled and trained to handle the jobs of today's work place.

Employers must change: Missouri firms must develop their workers' skills and utilize their work force according to the practices and key components that make up a high-performance work organization, benchmarking to best international practices and performances.

Educators must change: They must work more toward becoming more market sensitive to make sure that they meet the demands of their market (Missouri firms/employers) in a timely fashion -- Missouri's educators must ensure that their students graduate with the skills and training that employers are seeking.

The public sector must change: It must build on education, training and state/federal initiatives to support a more market-driven, performance based educational system. Existing educational organizations focus on issues regarding students from K-12, as well as the adult training and life-long learning programs. The public sector can complete the educational scope by focusing its efforts on providing education and training opportunities to the disadvantaged/marginal work force in Missouri.

If all three work in partnership with one another, the state economy will become more market-driven, performance based, and will deliver its products and services in an efficient and timely manner. Key agencies, such as the Department of Elementary and Secondary Education and the Department of Labor and Industrial Relations will join in the process of determining the most appropriate distribution of responsibilities for training and educating the work force: K-12, high school and adult students, as well as the marginal workers.

In our view, Missouri needs to take a holistic comprehensive approach to work force needs. This approach should be directed toward the following long-term goals.

- 1) World-class Basic Education K-12: The beginnings of this efforts have already been defined in the Governor's educational act.
- 2) An effective system of school-to-work preparation and transition.
- 3) Market-driven adult training.
- 4) The employers must also work to become high-performance work organizations and adopt human resource practices consistent with this concept.

The first step toward accomplishing this mission would be to establish a Human Resources Working Group that is a public/private partnership driven by the private sector. The Human Resources Working Group will develop a detailed plan for addressing the issues outlined in the Market Research Report. The strategic actions will be ready for submittal to the 1995 Legislative Session.

1.6 Global Competition Requires a High-Performance Missouri Infrastructure

New technologies require new infrastructures. Roads, rail, water and airways remain as critical as ever, and environmental standards are dramatically altering approaches and investment needs in all of these

infrastructure areas. They must be constantly maintained and upgraded if Missouri firms, workers and communities are to have access to the resources they need to compete today.

The Market Research Report confirms that Missouri's location, great rivers, and historic investment in roads, water and airports has provided a unique competitive advantage to Missouri firms. These factors give Missouri a comparative advantage as a major distribution center on a national and international level, which continues to benefit Missouri's agriculture and food industry, manufacturing and business service firms. This Report, however, also underlines the need to update and further strengthen Missouri's existing infrastructure, especially for highway, rail, mass transit systems, sewage systems and telecommunications in order to be an effective competitor.

We believe that if the need to upgrade Missouri's infrastructure are to be met, Missouri needs to change the way they approach infrastructure issues:

- o Missourians need to share an overall long-term agreement on priorities for strategic investment in infrastructure for economic development purposes. Sub-state regions have reached some agreement, and sub-sectors of infrastructure have reached some agreement among themselves, but there is no overarching agreement that covers all sections and sectors of the state.
- o Missouri needs to recognize the importance of state-of-the-art telecommunications in the development of high-performance firms, workers and communities.
- o Missouri needs to have the financial tools to finance its infrastructure investments.

This Strategic Action Plan should ensure that every Missouri community has the opportunity to build 21st century infrastructure systems essential to business start-up and expansion. This will involve:

- o Creating a single statewide partnership of private and public interests which set integrated priorities for public investment in air, road, rail, water management and telecommunications. These public investment priorities are then periodically updated through an annual report on the overall quality of Missouri infrastructure from an economic development perspective;
- o Constructing a network of information networks (data, voice and video combined) to connect all potential users: firms, schools, universities, hospitals, households, etc.;
- o Providing assistance to rural and urban Missouri communities to improve their infrastructure and integrate 21st century information technologies into their day-to-day business activities;
- o Providing the bridge financing to help fill in local infrastructure plans. This issue needs to be addressed in conjunction with the Missouri Investment Partnership actions.

The first step toward accomplishing this mission would to establish an Infrastructure Working Group with key private and public sector leaders representing utilities, banks, the Public Service Commission, the Department of Transportation, local communities and other private and public organizations involved in infrastructure issues. This Working Group will begin to create a single statewide partnership of private and public interests to set integrated priorities for public investment in air, road, rail, water management and telecommunications and influence the long-term goals for infrastructure issues through recommendations to the relevant institutions such as the Public Service Commission and the Department of

Transportation. The group will also address how it can support, in the interim, the infrastructure initiatives already underway.

The Infrastructure Working Group would be responsible for developing a detailed plan for addressing the issues outlined in the Market Research Report. More specifically, the Working Group will be responsible for:

- o Confirming that the four components of Missouri's infrastructure which need to be addressed in priority are (1) the road transportation system, (2) sewage treatment facilities, (3) telecommunications; and (4) the railroad network;
- o Developing a Missouri Agenda to complement federal initiatives and funding in each of the four areas. For example, the Missouri Information Infrastructure agenda needs to complement the National Information Infrastructure Agenda for Action, the federal initiative for developing the national "electronic highways." The five Infrastructure Agendas will define goals for each of the four infrastructure areas and the actions necessary to achieve these goals including changes in the Missouri Statutes. These actions could include, for example, the creation of a Missouri Rail Assistance program, changes in telecommunications regulations and the creation of new financial tools to implement local infrastructure improvement plans;
- o Developing a self assessment system for communities to evaluate their infrastructure requirements, including the information infrastructure.

1.7 Global Competition Requires High-Performance Missouri Marketing

This section will be summarized in the next draft.

1.8 The High Cost of Competitiveness: The Need for Community Development

This section will be summarized in the next draft.

1.9 Managing Missouri's Economic Development

Successful economic development management must fulfill four requirements if it is to be successful in a world of decreased public resources and increased global competition:

- 1) Public sector resources must be leveraged by private sector resources;
- 2) These private and public resources must reach a scale large enough to make a measurable difference;
- 3) Continuity of strategic direction must be assured over time; and

- 4) Managers of public as well as private sector funds need to be held accountable to performance-based outcomes.

These requirements demonstrate the fact that both the private sector and the public sector are essential to the success of economic development efforts:

- o The public sector needs to create policies, mechanisms and institutions to carry out Strategic Action. The main public sector actor in Missouri is the Department of Economic Development (DED). It is not, however, the only actor. A number of other departments, agencies and public sector organizations have a significant impact on economic development through their tax, expenditure and regulatory policies. These activities need to be coordinated to accomplish Strategic Action.
- o The private sector is the engine of the Missouri economy. The private sector, therefore, needs to join the public sector in identifying structural economic changes that require public action and eliminating the barriers that prevent the creation and growth of businesses. The private sector demonstrates the soundness of the Strategic Action Plan by choosing to invest in key initiatives. Their involvement helps to ensure soundness by providing continuity from Administration to Administration and by insisting that all managers are accountable on a performance basis.

For these reasons, proper management of economic development needs to answer two questions:

- 1) How can the Department of Economic Development be organized to fulfill its role in implementing this Strategic Action Plan?
- 2) How can key public sector and private sector actors work together to make sure that their efforts and initiatives complement one another and lead to successful strategic outcomes?

Recognizing the geographic and cultural diversity of this state, Missouri needs one central public sector economic development agency for the state to manage or coordinate all economic development activity. The Missouri Department of Economic Development is the logical agency to ensure that Strategic Action pays off in wealth and job creation, and to coordinate the development activities of state government. More than a decade of experience has led to a fundamental change in how a number of states have decided to manage their Departments of Economic Development. Since 1984, a number of state statutes have taken a more strategic approach, often as a part of an overall strategic planning process. In this newer approach, which could be used by the State of Missouri, the authorizing statute defines the Department strategically:

- o Section I. Defines the Strategic Market Need to be addressed by the Department and often provides for the annual market research update of Strategic Action. This annual update takes place within a planning time frame usually longer than a single gubernatorial term (such as five years). The overall Strategic Action Plan is then periodically updated.
- o Section II. Defines a Mission for the Department.
- o Section III. Spells out a small number of Objectives that lead to performance goals which measure outcomes such as income, wealth and quality job creation, and not inputs such as staff, supplies and equipment.

- o Section IV. Describes the process by which the Director develops an Annual Business Plan which gives the Director the flexibility to employ management and budget to carry out the statutory mission and objectives without specific statutory direction as to what programs, policies, divisions, staffing and line item budgets are to be implemented. The legislature ensures its control through review, modification and approval of the Director's Annual Business Plan and Program Budget.
- o Section V. Describes the process by which the Director develops a Program Budget to carry out the Business Plan.
- o Section VI. Describes the development of an Annual Report Card which measures and reports performance in employing the Business Plan and Program Budget.

The public sector and the private sector already work together on economic issues in Missouri. The Business Council provides guidance and oversight to the Department of Economic Development for the development of the Strategic Action Plan. We recommend that this collaboration be progressively extended and improved to encompass most economic development actions. We make this recommendation only if it is accompanied by (1) a consolidation in the existing plethora of boards and commissions under clear executive accountability; and (2) that the initial level of bipartisan private sector appointments is widely recognized as establishing instant credibility in all sectors and constituencies.

We suggest a three-step order to this collaboration in 1994:

- o The first step would be to create public/private working groups to start implementing the Strategic Actions for each of the Strategic Action areas.
- o The second step would be to institutionalize this public/private collaboration by creating institutions managed jointly by the public and the private sectors. We suggest beginning with the Missouri Business Modernization and Technology Corporation for technology and the Missouri Investment Partnership for financial capital. Each would operate under a performance contract to the Department.
- o The third step would be to bring the overall management of economic development under an umbrella institution where the private and public sectors would develop an integrated approach to economic development in all areas: technology, financial capital, human resources, infrastructure, community development, marketing, etc.

Section

2

2.0 MISSOURI'S GLOBAL ECONOMIC ADVANTAGES

Missouri's economy has many significant comparative advantages, opportunities and challenges. This chapter summarizes the most significant elements of the Market Research and focuses on Missouri's global economic advantages in the state's most important industries -- its economic base.

The strength of any economy lies in its economic base. Missouri, like all other economies, has two types of industry -- economic base industry and distributive industry.

- o Economic base firms drive the economy. They sell some of their products or services beyond the local economy and, therefore, "import" income and create jobs in their local area. As these firms grow and innovate, they and their employees generate increasing demand for goods and services produced locally, and contribute to the growth of the entire economy. No economic expansion can be sustained without growth of the economic base.
- o Distributive industries merely reflect growth or decline in the economic base. Distributive industries are those which re-circulate wealth already located within the economy. As economic base firms innovate and grow, they and their employees generate increasing demand for goods and services sold locally. Distributive industries only grow if the economic base grows.

Missouri's economy is very diverse, but the key to Missouri's economic future lies in the four components of its economic base: manufacturing, agriculture and food industry, business service, and tourism/retirement/entertainment. These four industries are the foundation for economic development in Missouri. In terms of economic capacity, manufacturing is the dominant component providing almost 75% of value of products and services exported outside of Missouri. As such, the future of the Missouri economy mostly depends on the future of its manufacturing firms. Either these firms will meet the challenges of the new Information Age described in Section 1.0 and Missouri will prosper, or they and Missouri will fall behind their competitors.

2.1 Missouri's Comparative Advantages

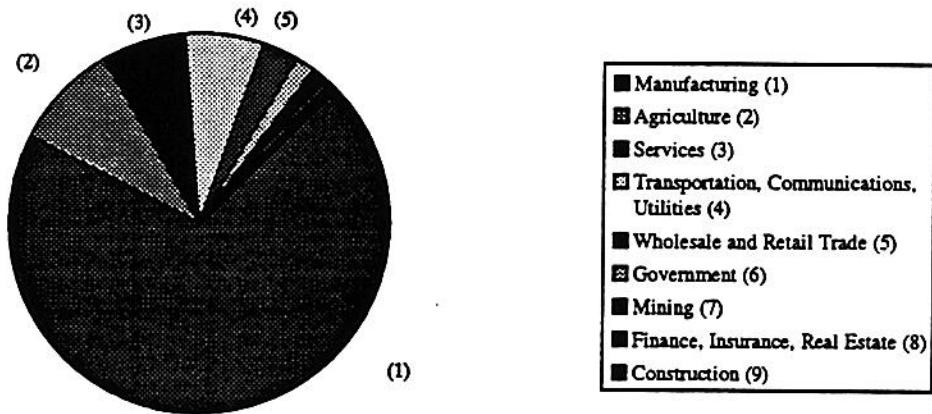
Missouri has significant strengths in its economic base which give its firms, workers and communities comparative advantages in today's global competition.

- #1: Missouri's economy is supported by a higher percentage of economic base jobs than the national economy.
- #2: Missouri's manufacturing base is very diverse with strong presence in both traditional and technology-based sectors.
- #3: Missouri has a high concentration of technology resources both in private companies, in general medical hospitals and universities.
- #4: Missouri has moderate wages: it ranks 29th for production workers hourly wage in the nation and 23rd for average annual pay at 92% the national average.
- #5: Missouri's natural resources -- fertile soil and favorable climate -- provide a good environment for agriculture.

- #6: Missouri has a geographically central position in the nation combined with the existence of the Missouri and Mississippi rivers.
- #7: Missouri has a number of institutions with extensive and recognized experience and expertise in health services.
- #8: Missouri's scenic, historic and cultural resources, especially the lakes and springs of the Ozarks, provide a good environment for the development of tourism.

This chapter spells out each of these comparative advantages in relation to other states and nations, Missouri's potential industrial opportunities given the natural resource base, and those high-performance sectors to be targeted for development.

Value of Missouri Export Per Sector, 1990



Source: "A Structural Overview of the Missouri Economy in 1990", C. Braschler and G. Devino, University of Missouri-Columbia, unpublished paper.

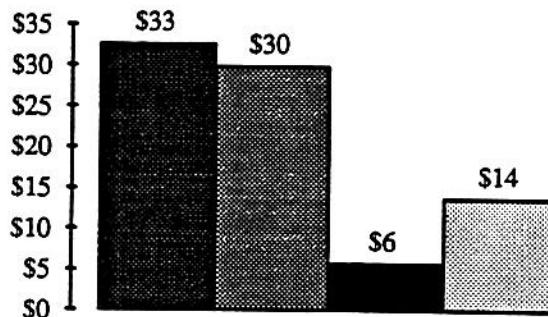
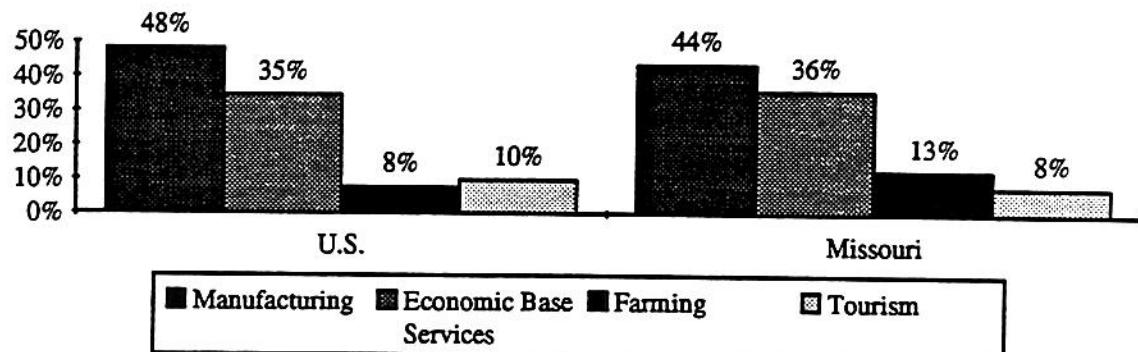
Missouri's economic base has been undergoing changes similar to those experienced by the nation as a whole in the past decade:

- o Manufacturing and farming employment has been declining for a number of years at the national level even if value of output has been increasing. The trend is similar in Missouri, but the state has fared better. Manufacturing employment declined by 8% in the nation between 1981 and 1991. It declined by only 2.2% in Missouri. Similarly, farm employment declined by 18.5% nationally during the same decade whereas it decreased slightly less by only 17.4% in Missouri.
- o Nationally, economic base services (transportation, communication, and healthcare industries) and tourism have been growing for a number of years, creating jobs to offset some of the jobs lost in manufacturing and farming. The trend is similar in Missouri. Missouri has been creating economic base service jobs faster than the national average -- employment in this sector grew by 39.5% in Missouri between 1981 and 1991 versus 37.5% in the U.S. Tourism, however, grew more slowly in Missouri with 40.7% growth in Missouri during the same period versus 56.2% nationally. Tourism, however, has been

expanding faster in Missouri since 1991 as a booming entertainment industry has emerged in the Branson area.

Missouri has a first comparative advantage: its economy is supported by a higher percentage of economic base jobs than the national economy. Missouri has more workers whose products or services are sold beyond the local economy and, therefore, "import" income and wealth. Economic base employment represented 32.8% of the total number of jobs in Missouri in 1991 versus 28.9% nationally. The mix of the economic base, however, presents a challenge for Missouri's future because it includes more low-income jobs. Missouri depends proportionally more on farm jobs which provide a lower level of income.¹

Economic Base Employment and Income in Missouri



Source: Full and Part-Time Employment Tables (SA 25), U.S. Department of Commerce, Bureau of Economic Analysis, September 1992

One of Missouri's challenges is to maintain its comparative advantage in terms of the size of its economic base while developing higher paying jobs. As described in Section 1.0, if this challenge is to be met, Missouri will have to create high-performance firms in all the sectors of its economic base. This is especially true at a time when one of Missouri's largest economic base industries, the defense-related industry, is undergoing dramatic changes.

¹ Source: Calculation based on Full and Part-Time Employment Tables (SA 25), U.S. Department of Commerce, Bureau of Economic Analysis, September 1992

2.2 Missouri's Manufacturing Base

Manufacturing is more important in Missouri's economy than its absolute or relative numerical size, because manufacturing, through exports, generates income, growth and indirect jobs. Manufacturing output has been growing in the U.S. and this country remains the world leader in a number of manufacturing industries even if the overall number of manufacturing jobs is declining in the nation. Missouri has specific competitive strengths in a number of manufacturing sectors, including both mature, traditional and evolving technology-oriented product industries.²

2.2.1 Composition of the Manufacturing Base

Missouri's manufacturing base is highly diversified. This base has been built over the years and reflects the historical changes in manufacturing and the successive emergence of new sectors. The main manufacturing sectors in Missouri cover a wide range of economic activities both traditional, such as food processing and apparel, and newer high technology-oriented activities such as aerospace and automobiles:

- o Aerospace and military equipment account for more than 35,000 jobs such as those provided by a few large companies;
- o Information and communication includes commercial and newspaper printing and publishing. While primarily local, there are a few exceptions such as Hallmark whose products are sold across the nation;
- o Consumer products include both non-durable goods such as food (poultry products, bread and other bakery goods), and greeting cards, as well as durable goods such as motor vehicles and parts, clothing and shoes, wood household furniture, and millinery;
- o Industrial components are represented by semiconductors, and chemicals such as plastics, whose consumption is driven by the level of activity of manufacturing firms;
- o Industrial equipment such as air conditioning and refrigeration, electrical motors and generators, other industrial and commercial equipment, are very sensitive to the evolution of capital investments by manufacturing firms.

The diversity of Missouri's manufacturing base is another comparative advantage. Each of these activities reacts differently to the evolution of the general economy. Some of them depend on military spending and international policy, others are directly related to consumer spending and some depend on the level of investment of manufacturers. Since trends in different sectors are likely to be different, some sectors are booming while others are hurting; this variety makes the Missouri economy more resilient in times of economic hardship and provides an opportunity to build an expanded, stronger economic base.

² Traditional industries are those which manufacture basic products such as food, clothes or electrical equipment. They can use traditional processes or high-technology processes.

Manufacturing Sectors With More Than 1% Of Total Missouri Manufacturing Employment

SIC codes	Empl.	
3721	25,000	aircraft
3711	19,514	motor vehicle and passenger car bodies
2752	9,214	commercial printing
2711	8,531	newspaper publishing and printing
3714	8,288	motor vehicle parts and accessories
3089	7,279	other plastic products
2015	6,823	poultry slaughtering and processing
3621	6,213	electrical motors and generators
3761	5,000	guided missiles and space vehicles
3489	5,000	ordinance and accessories (military weapons)
2771	5,000	greeting cards
3674	4,784	semiconductors and related devices
3585	4,407	air-conditioning, warm air heating and industrial refrigeration equipment
3599	4,346	other industrial and commercial equipment
2325	4,268	men's and boy's separate trousers and slacks
3144	3,988	women's footwear
2051	3,607	bread and other bakery
2511	3,405	wood household furniture
2759	3,329	other commercial printing
2351	3,293	millinery

Source: County Business Patterns, 1990

2.2.2 Targeting Missouri's Winning Industries: Potentials and Challenges of Missouri's Manufacturing Base

As described above, employment in Missouri's manufacturing base has outperformed the nation: manufacturing employment decreased by 2.2% in Missouri whereas it declined by 8% nationwide in the last decade. This figure, however, hides important variations, as would be expected in a diversified economy, some Missouri industries have grown faster than their competitors elsewhere in the country while others have grown more slowly.

In order to understand the change in employment, we have undertaken a shift-share analysis which disaggregates state employment changes in key industries into the component sources of change. We have also analyzed these industries in terms of global competitors.

Shift-Share Analysis

A shift-share analysis separates a state's employment change over a certain period in a particular industry into its component sources of change. This analysis allows one to look more closely at various causes of industry growth or decline. There are three components that, when added together, equal the total state employment change in a given industry. The following is the shift-share equation:

Total Missouri Employment = National Effect + Industry Effect + Missouri Industry Effect
Change in Selected Industry

1. National Effect is the change in total national employment for all manufacturing industries over time. This component reflects overall change in the national economy.
2. Industry Effect is the total change in employment nationally for a selected industry minus national effect. This component reflects overall industry performance distinct from general national economic trends.
3. State-Industry Effect reflects the performance of Missouri firms in a selected industry, and indicates whether Missouri has gained or lost share of employment relative to competitors nationally. This component is the change in industry employment in Missouri minus the change in industry employment nationally. When the term is positive, Missouri employment in the selected industry grew faster than national employment in the industry and Missouri gained share. When it is negative, growth was slower than the national average, and Missouri lost share.

Several findings emerge:

- o First, Missouri has had an impressive number of successful manufacturing industries between 1980 and 1990. Forty-two (42) Missouri industries have grown in employment and gained national market share between 1980 and 1990. Missouri has increased shares in durable (truck trailers, furniture) and non-durable (flour mixes, perfumes) consumer products industries, in industrial components (motor vehicle parts, semiconductors) and in production equipment (industrial process furnaces, power transformers).

This confirms that the diversity of Missouri's manufacturing base is a definite comparative advantage that Missouri must enhance and develop. It enabled Missouri to be part of the growth in a number of diverse sectors which grew nationally in the past decade such as electronic-related (semiconductors, engineering and scientific instruments), health-related (surgical and medical instruments) or culture-related (book publishing, book printing).

Missouri Successful Industries³

Industry	Missouri Empl. 1990	U.S. Industry Empl. Change 1980-1990 ⁴	% Change In Share 1980-1990
Household Cooking Equipment	1,000	-12%	49.920%
Semiconductors and Related Devices	4,784	41%	1,207%
Prepared Flour Mixes and Doughs	1,062	50%	1,153%
Millinery	3,293	451%	914%
Engineering and Scientific Instruments	2,984	449%	364%
Boat Building and Repairing	1,924	10%	221%
Primary Production of Aluminum	2,280	-24%	217%
Truck Trailers	1,265	-22%	145%
Fans, Blowers and Air Purification Equipment	1,023	-16%	137%
Wood Household Furniture	3,405	-4%	134%
Storage Batteries	1,427	-16%	127%
Industrial Process Furnaces and Ovens	1,639	16%	98%
Book Publishing and Printing	1,440	19%	89%
Miscellaneous Fabricated Wire Products	1,993	5%	89%
Hardwood Dimension and Flooring Mills	1,426	-1%	88%
Primary Batteries, Dry and Wet	1,384	-2%	83%
Surgical and Medical Instruments	2,606	53%	69%
Household Audio and Video Equipment	2,280	-43%	68%
Power, Distribution & Specialty Transformers	2,499	-20%	61%
Electroplating, Plating, Polishing, Anodizing	2,551	7%	51%
Men's and Boy's Suits, Coats and Overcoats	1,240	-41%	47%
Upholstered Wood Household Furniture	1,830	-8%	47%
Steel Wriedrawing and Steel Nails and Spikes	1,684	-17%	46%
Noncurrent-Carrying Wiring Devices	2,499	-10%	44%
Millwork	1,193	33%	44%
Wood Kitchen Cabinet	1,345	22%	43%
Miscellaneous Electrical Machinery	2,499	208%	43%
Motors and Generators	6,213	-21%	37%
Fabricated Plate Work (Boiler Shops)	2,147	3%	35%
Miscellaneous Industrial Organic Chemicals	2,508	-6%	32%
Hand and Edge Tools	1,065	-12%	31%
Pesticides and Agricultural Chemicals	2,813	2%	31%
Motor Vehicle Parts and Accessories	8,288	-15%	26%
Manifold Business Forms	1,282	11%	25%
Small Arms Ammunition	2,278	-9%	24%
Sings and Advertising Specialties	1,888	22%	15%
Miscellaneous Manufacturing Industries	1,371	-1%	13%
Book Printing	1,932	5%	10%
Special Dies and Tools, Die Sets, Jigs, Fixtures	2,434	3%	7%
Corrugated and Solid Fiber Boxes	2,887	11%	6%
Perfumes, Cosmetics and Toilet Preparations	1,655	24%	4%
Ready-Mixed Concrete	2,422	5%	3%

³ Industries with employment in excess of 1,000 which increased employment and gained share with respect to national competitors. Source: U.S. Department of Commerce, Bureau of the Census, County Business Patterns, Annual 1980 and 1990, enhanced to remove suppression of confidential information by the National Planning Data Corporation, Lexington, MA

⁴ U.S. Industry Employment Changes equal U.S. Employment Changes in a given industry minus the change in national manufacturing employment, and reflects industry growth distinct from general national economic trends.

- o Second, successful Missouri manufacturing industries are often not the sectors which are its biggest employers. Among Missouri's twenty top employers, only five (motor vehicle parts, electrical motors and generators, semiconductors, wood household furniture, millinery) increased share. None of the top four sectors (aircraft, motor vehicle and passenger car bodies, commercial printing, newspaper publishing and printing) increased share.

This result demonstrates the importance of the emergence of new firms, especially in emerging sectors. In this respect, Missouri does not perform well. Missouri ranked 35th in 1992 for the creation of new companies.⁵ One of Missouri's challenges in the future will be to remove financial and other barriers which hinder the creation of new firms.

- o Third, one quarter of Missouri's winning industries are high value-added, growing industries. Ten of the 42 winning sectors are industries which have a national value-added per worker higher than the national average (\$114,113). All of them but one have increased employment in the past decade. All of them provide high-paying jobs, close to or above the national average in manufacturing industries (\$29,289).

Industry	Value-added per worker	Average annual wage
Book Publishing and Printing	\$683,234	\$32,524
Pesticides and Agricultural Chemicals	\$544,055	\$37,780
Miscellaneous Industrial Organic Chemicals	\$380,959	\$43,594
Perfumes, Cosmetics and Other Toilet Preparations	\$338,410	\$28,159
Semiconductors and Related Devices	\$233,781	\$37,090
Engineering and Scientific Instruments	\$210,795	\$41,568
Prepared Flour Mixes and Doughs	\$201,393	\$27,860
Surgical and Medical Instruments	\$139,957	\$29,548
Miscellaneous Electrical Machinery	\$135,158	\$30,787
Manifold Business Forms	\$119,248	\$27,413

More than one-half of these sectors (chemicals, instruments, semiconductors, electrical machinery) build on Missouri's third comparative advantage: the concentration of technology resources both in private companies such as McDonnell-Douglas, General Motors, Emerson Electric and Allied Signals, and in medical hospitals and universities. In fact, Missouri's industry ranked 11th in the nation in 1989 for the total amount of funds invested in R&D with \$2.38 billion. These resources must be mobilized even more efficiently to foster the development of more high-performance firms.

- o Fourth, three-quarters of Missouri's successful industries are lower value, more traditional, labor-intensive industries. These sectors build on Missouri's long manufacturing tradition but also on its fourth comparative advantage: moderate wages. Missouri ranks 29th for production workers hourly wage in the nation and 23rd for average annual pay at 92% the national average. Missouri has beaten its competitors in these traditional sectors because it has managed to combine moderate wages with efficient production and product leadership. This

⁵ Source: The 1993 Development Report Card for the States, CFED, Washington D.C., 1993

success is likely to have a diminishing impact in the future for many of these sectors as foreign producers increasingly match the U.S. efficiency in production but do so at lower wage level.

- o Fifth, the list of the winning sectors reveals a surprising finding: the failure of Missouri to build significantly on its fifth comparative advantage: its natural resources. In spite of the success of major firms such as Ralston Purina and Anheuser-Busch, Missouri has been losing ground in the food processing industry between 1980 and 1990. All but two of the ten food processing sectors which employ more than 1,000 workers in Missouri lost national market share in the last decade. Missouri lost market share in the overall food processing industry, whereas the food processing industry was growing nationally.

Industry	Missouri Employment 1990	U.S. Industry Employment Change 1980-1990	Percent Change in Share 1980-1990
Meat Packing Plants	1,955	-10%	-24%
Sausages and Other Prepared Meat Products	1,757	26%	-6%
Natural, Processed and Imitation Cheese	2,120	14%	-23%
Fluid Milk	1,322	-16%	-23%
Miscellaneous Frozen Specialties	1,254	7%	-52%
Prepared Flour Mixes and Doughs	1,062	50%	1,153%
Prepared Feeds and Feed Ingredients for Animals	1,192	-12%	-26%
Bread and Other Bakery Products	3,607	-6%	-16%
Malt Beverages	2,500	-13%	-14%
Soft Drinks and Carbonated Waters	2,532	-25%	7%
Total Food Processing	37,389	2%	-5%

Given these facts, it seems obvious that the food processing industry should be a primary target for economic development in the coming years. Missouri needs to bring together its farmers, its food processing companies and its universities to work on developing this industry.

- o Sixth, Missouri lost share in two major industries: the aircraft and defense-related industries and the fast growing printing and publishing industries. The impact of these losses is not as negative as it seems. The printing and publishing industries offer low value-added, low-paying jobs closer to the service industry than to manufacturing. By reducing its dependence on aircraft and defense-related industries, Missouri is in a position to soften the consequences of the reduction in military spending.

Even if the jobs lost in defense-related industries are compensated by jobs created by other economic base firms, the process will be long and painful and will require proper attention from the State. Based on national trends, these new jobs are likely to be created by small manufacturing firms which are more sensitive to the quality of the business environment provided by Missouri, more so than the large defense-related firms, especially with regard to training and financial capital.

Missouri's manufacturing base is widely opened to the world and experiences the challenge of the global economy on a day-to-day basis. It is therefore important to be aware of the challenges presented to Missouri manufacturing firms by worldwide competition.

One-half of Missouri's top manufacturing sectors, including its two top employers, are sensitive to foreign trade and to the competition of foreign high-performance firms. These sectors fall into four very different categories:

- o Missouri's first manufacturing employer, aircraft, has a strong foreign trade sensitivity index because of the high level of exports (\$24 billion in 1992 versus \$4 in imports). Its main foreign competitors are other industrial countries, especially those of the European community.
- o Missouri's second manufacturing employer, motor vehicles and passengers car bodies, has a strong foreign sensitivity index for the opposite reason: imports in this sector are several times higher than exports (\$62.7 billion in 1992 versus \$18.2 in exports). The United States' main competitors are well known: Japan and Germany.
- o Three other high value-added sectors (motor vehicle parts and accessories, electrical motors and generators, semiconductors) have roughly balanced exports and imports. The main sources of imports for these products are Japan, Canada, the countries of the European Community, and Mexico, a subcontractor for American companies.
- o Two sectors (men's and boy's trousers and slacks, footwear) are traditional manufacturing sectors with a high labor cost. For these sectors, the foreign trade sensitivity index is high because the U.S. imports are high. For 1992, imports for men's and boy's trousers and slacks reached \$2.6 billion versus \$0.8 billion in exports. Similarly, U.S. footwear imports were \$8.3 billion for \$0.3 billion in exports. Missouri's foreign competitors for these products are low-wage countries such as China, South Korea, Taiwan, and Hong Kong⁶.

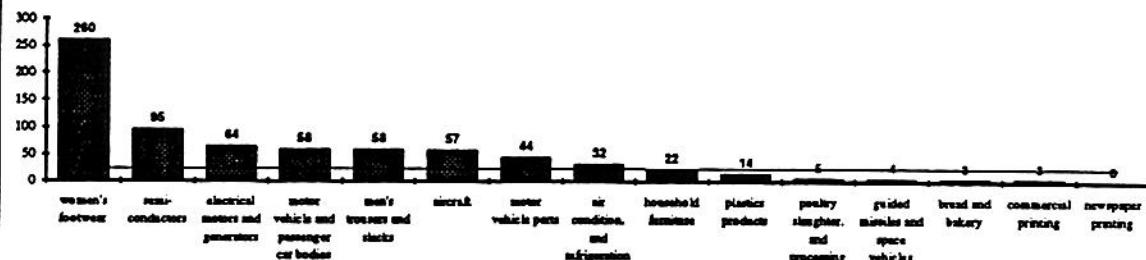
The North American Foreign Trade Agreement (NAFTA) will create new challenges and new opportunities for Missouri manufacturing firms. In the short-term, exports of consumer goods to Mexico are expected to grow tremendously as tariffs are lowered. In the long-term, however, lower wages in Mexico are likely to threaten U.S. firms which produce labor-intensive goods. For instance, U.S. auto makers are expected to boost exports to Mexico to 60,000 vehicles next year from 7,700 this year. This increase should have a positive impact on the activity of the plants located in Missouri. In the long-term, however, lower wages in Mexico are likely to threaten the assembly of small cars and light trucks in the U.S. if existing plants do not boost their productivity.

The other sectors are much less sensitive to foreign trade. They include three diversified industries -- food processing, printing and publishing, and chemicals -- which are among the main employers in Missouri. In these industries, Missouri's main competitors are in the U.S. For instance, the two main components of the food processing industries -- poultry slaughter and processing, and bread and bakery -- are among the least sensitive sectors to foreign trade. Overall, the food processing industry (SIC 20) which represents 11.5% of Missouri manufacturing employment is not very sensitive to foreign trade with an overall index of 0.1. Missouri's direct competitors are located in neighboring states such as Nebraska and Iowa.

⁶ Source: U.S. Industrial Outlook 1993, U.S. Department of Commerce, International Trade Administration, January 1993

Sensitivity to Foreign Trade

The sensitivity of a sector to foreign trade is equal to the ratio of the sum of U.S. imports and exports divided by the value of shipment. A sector is considered sensitive to foreign trade if either the value of exports or the value of imports or both represent a significant percentage of the value of the goods produced nationally. As a result, a sector is considered sensitive to foreign trade if its sensitivity index is higher than 30.



Source: U.S. Industrial Outlook 1993, U.S. Department of Commerce, International Trade Administration.

The diversity of the manufacturing sector with respect to foreign trade shows the complexity of the challenge Missouri faces to help its firms to improve their performance, grow and compete. Firms in different industries have different needs. However, all Missouri firms operate in the global economy. Missouri's competitors can be in neighboring states (such as Iowa for the food processing industry), in developing countries (such as China for the shoe industry) or in developed countries (such as Japan for the car industry). No matter where they are, Missouri firms must be high-performance firms and must keep pace with their competitors if they want to be successful.

If Missouri is to provide increasing standards of living and a sufficient number of high-paying jobs, it has to provide a business environment flexible enough to meet the changing, diverse needs of the various firms and industries which make up Missouri's manufacturing base.

The key to a high-performance economy, wealth creation, increased standards of living and international competitiveness is productivity growth — the capacity to produce more with less. If productivity growth slows down or decreases, the only way for firms to remain competitive is to cut jobs or reduce salaries.

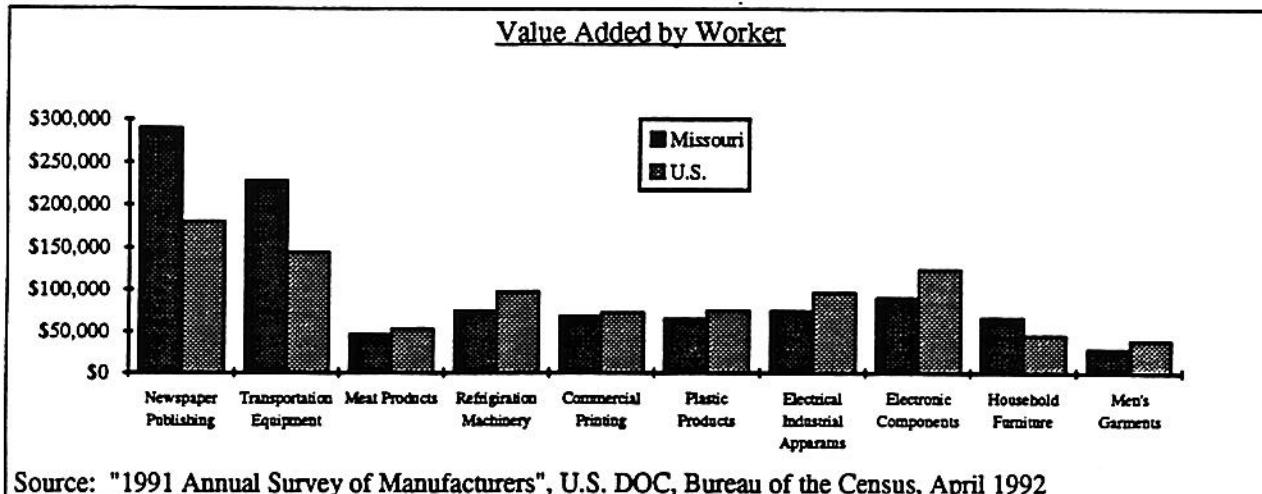
Conversely, if productivity growth increases, workers receive higher real wages and firms become more competitive as the ratio of outputs to inputs increases.

The average productivity of Missouri firms is 4% higher than the national average. However, productivity issues exist in some traditional and technology-based industries.⁷:

- The productivity of Missouri firms is higher than the national average in three out of Missouri's ten top manufacturing sectors: newspaper publishing and printing (+61%), transportation equipment (+59%), and household furniture (+48%), while commercial printing remains consistent with the national average.

⁷ Productivity is defined as the ratio of the value added divided by the number of production workers. Calculation is based on the 1991 Survey of Manufacturers MS91 (AS)-3, U.S. Department of Commerce, Bureau of the Census. Productivity is calculated at the three-digit SIC code level except for transportation equipment at the two-digit SIC code level. Confidentiality issues prevent data to be released at a more detailed level.

- o The productivity of Missouri firms is significantly lower than the national average in six other sectors: plastic products (-13%), meat products (-14%), electrical industrial apparatus (-23%), refrigeration machinery (-24%), men's garments (-26%), and electronic components (-27%).



Among the six sectors whose productivity is lower in Missouri than at the national levels, four (all except plastic products and meat products) are sensitive to foreign competition and are at risk of losing market shares if they do not increase their productivity to reach, at a minimum, a level similar to their national competitors.

- o Missouri firms which produce men's garments are at risk of losing market shares to imports from low-wage countries. They need technology application assistance to find out how their productivity could be increased through more efficient production processes.
- o Missouri firms which produce highly technical goods, such as semi-conductors and electrical motors and generators, are at risk of losing market shares to imports from other industrial countries, especially Japan. They need assistance in research and development to keep pace with the innovative productive processes developed by their international competitors.

Increasing productivity and sustaining productivity depends on a number of factors:

- o Training investment in both management to keep pace with new, more effective forms of management organization and in workers to upgrade their skills and to encourage them to think, communicate, make use of information and provide ideas to improve products and production processes;
- o Innovation investment in technology to improve production processes of existing products and to develop new, higher value-added products;
- o Financial investment in more efficient machinery and equipment to reduce production costs;
- o Public investment in infrastructure such as transportation means and telecommunication to reduce delivery costs to customers and to improve communication between manufacturers and their customers and suppliers.

2.3 Missouri's Agriculture and Food Industry Base

Total U.S. employment in agriculture has been steadily declining since the Great Depression. All forecasts indicate that the decline in agricultural employment will continue its steady downward trend. Agriculture in Missouri has also experienced this general trend. With the use of technology, farmers have become more productive, and as a result:

- o Farm employment has been decreasing for the past 20 years;
- o Land ownership has been concentrated into fewer and larger farms. For example, in Missouri, agricultural land declined by 13% since 1920, while the number of farms decreased by 59% and the average size of farms increased by 43%.⁸ The trend continues its downward path with the number of farms decreasing by 10% between 1980 and 1990. Despite the decrease in the number of farms, Missouri farms remain relatively small with an average size of 284 acres in 1992, which is well below the national average of 468 acres.

Despite declines in the number of farms and ranches, Missouri remains an important source of agricultural products in the U.S. Missouri ranks 7th in the nation in farm assets with \$26.8 billion. Missouri ranked 2nd nationally in terms of the number of cattle operations, hog operations and cows, and among the top 10 states in the production of turkeys in 1991. It ranked second for non-alfalfa hay and among the top 10 states in the production of corn for grain, soybeans for beans, sorghum for grain, general hay production, winter wheat, rice and Concord grapes in 1991.

The importance of agriculture in Missouri's economy, however, has been decreasing markedly.

- o Farm income accounted for 0.8% of personal income in 1991, and half as small as in 1981 with 1.6%.
- o Farm employment provided 12.5% of economic base jobs in 1991, down from 16.7% in 1981. The trend was even more sensitive in terms of total civilian employment: farm employment provided 3.3% of the total number of jobs in 1991 versus 6.3% in 1981.
- o The decline of agriculture is faster in Missouri than in other states. Missouri ranks 42nd for change in farm population between 1980 and 1990 with -36.2% versus -31.1% nationally.

The loss of farm jobs in the agricultural economic base has not resulted in decreased output. Missouri's agriculture is more productive today than at any time in the past. This is different from what usually takes place in the manufacturing sector.

- o Loss of jobs in manufacturing, especially in traditional industries, often results from loss of comparative advantages in terms of cost of labor, cost of capital, infrastructure or technology. Such jobs lost in manufacturing are generally transferred to other parts of the country or world.
- o Missouri agriculture has not lost any comparative advantage in terms of cost of labor or technology. On the contrary, it has steadily increased its productivity. No job has been

⁸ Source: The Missouri Quick-Fact Book, Midwest Research Institute and Capper Press, Topeka (Kansas), June 1991.

transferred to other parts of the country or the world. Increased productivity is positive, even if it results in the direct loss of farm jobs.

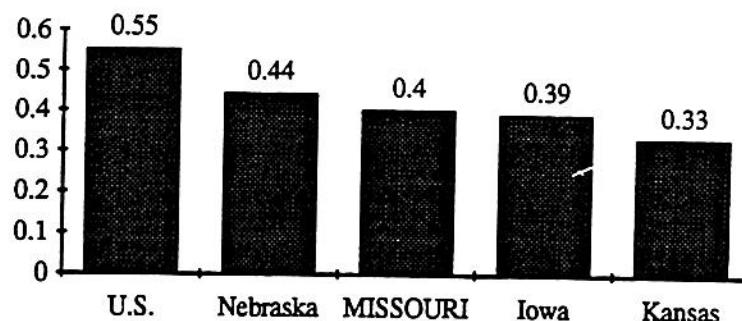
Agriculture, more than any other economic base sector, is strongly dependent on international trade and trends, as illustrated by the recent and heated negotiations on agriculture between the U.S., the European Community and Japan during the GATT discussions. Missouri's agriculture is in direct competition with foreign producers. Some of the most significant agriculture exports of the U.S. are also significant Missouri exports (soybean, corn, and animal products). Global market forces, the agricultural policies of the European Community, Japan and Third World nations, as well as fiscal, monetary and agriculture policies of the U.S. federal government enormously constrain the ability of Missouri to affect the level, direction and profitability of its various agricultural industries.

The economic activity generated by agriculture is essential to the prosperity of Missouri.

- o As mentioned above, food processing represents more than 11% of the total number of manufacturing jobs in Missouri. The activities directly related to agriculture (farming, agriculture services and food processing), but excluding freight, represent 6.5% of the total number of jobs in Missouri. Missouri has built a powerful cluster of complementary and diversified economic activities (farming, agriculture services, food processing and distribution) around its natural resources.
- o Agriculture-related activities are essential to the economic life of rural counties and communities. By providing jobs, these economic activities, sometimes complemented by tourism, provide an anchor and a source of income to the inhabitants of a number of rural communities.

As mentioned above, Missouri does not appear to fully build on its leading position in the production of agricultural commodities to create jobs in the food processing industry even if it has experienced tremendous growth in recent years through the relocation or expansion of 121 food related companies such as Tyson Foods or Premium Standard Farms between 1988 and 1992.⁹ Too many agricultural products still leave Missouri to be processed in other states such as Nebraska. One farm job in the U.S. results in an average of 0.55 jobs in the food processing industry. In Missouri, one farm job results in only 0.40 jobs in the food processing industry, more than Iowa (0.39) or Kansas (0.33), but less than Nebraska (0.44). The challenge and the opportunity for Missouri is to develop its food processing industry to bring it to the national average: this would add an extra 18,600 jobs in Missouri.

⁹ Source: Missouri's Economic Development Status 1993, Missouri Department of Economic Development, Research and Planning program; December 9, 1993

Number of Jobs Created in the Food Processing Industry by Each Farm Job

Source: SA25 Tables, U.S. DOC. BEA, September 1992

2.4 Missouri's Export Service Industry

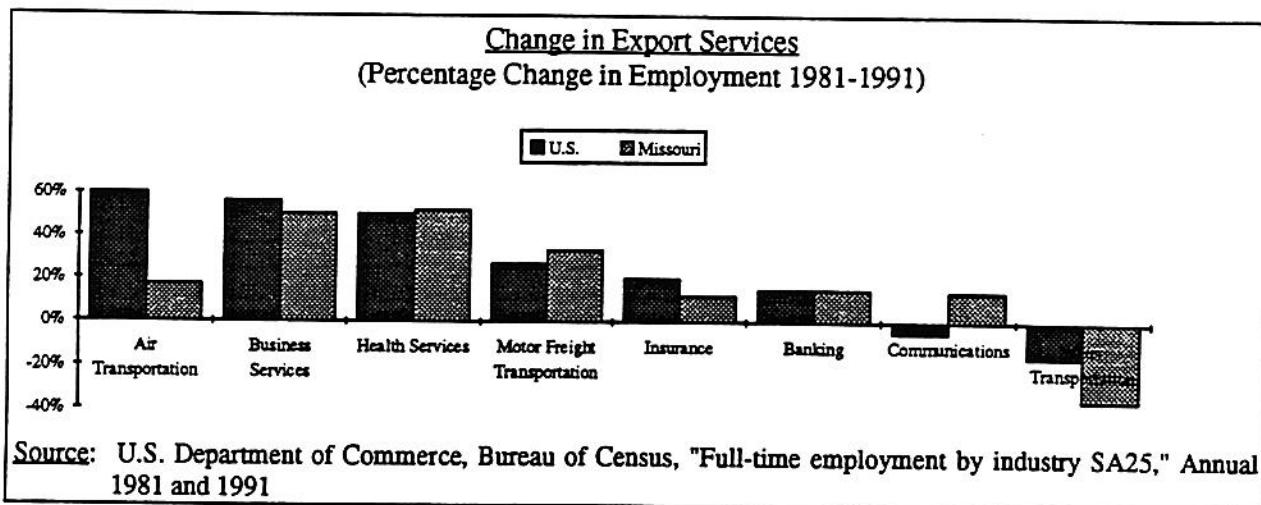
Service-producing industries produce intangible goods, some of which have high added value. Manufacturing, as a share of total U.S. employment, has steadily declined since 1960. In that same time, the service-producing industry's share of employment has increased. As technological development advances, it is becoming increasingly clear that intangible goods produced by service industries and manufactured goods are complementary. The U.S. is still the unquestioned world leader in several service-producing industries, such as higher education, computer software and medical services. Likewise, Missouri enjoys comparative advantages in several exports service-producing industries.

Service-producing industries include:

- 1) Economic base firms, such as air, water and motor freight transportation firms, communications firms, portions of the healthcare industry, some business service firms, and large banks, which export their products outside the state and diversify the Missouri economy;¹⁰
- 2) Secondary firms, such as local banks and business services (attorneys, consultants) which supply services to economic base firms and support their development; and
- 3) Tertiary firms, such as restaurants which supply goods and services to the residents in a town or region.

Missouri's overall service industry grew at a slower rate than nationally in the past ten years. At the national level, employment in the service sector grew by 33% between 1981 and 1991, whereas it grew by 28% in Missouri during the same period. The evolution, however, was different for secondary firms and for economic base firms.

¹⁰ Tourism is treated in a separate section.



Missouri firms which export their services outside the state have been created over the years around three industries which built on Missouri's comparative advantages:

- o The communications industry has flourished on Missouri's fourth comparative advantage: its moderate wages. AT&T's ten-state regional headquarters and the national training headquarters for American Bell, Inc. are located in Kansas City. United Telecommunications has its national headquarters in Kansas City.
- o Motor freight, air and water transportation evolved naturally from the Missouri's sixth comparative advantage: its geographically central position in the nation combined with the existence of the Missouri and Mississippi rivers. These industries evolved from the processing and shipment of agricultural goods produced in the region. An extensive transportation network (rail service, barge service, motor freight) has been developed to deliver goods across the nation and now serve a number of industries. For instance, Sears and J.C. Penney have regional distribution centers in Kansas City. Yellow Freight, Inc., one the largest shipping companies in the nation, has its headquarters in Overland Park. The Lambert-St. Louis airport is a hub for TWA.
- o The health services industry has built on Missouri's seventh comparative advantage -- its experience in health services -- and has managed to expand its operations to out-of-state. St. Luke's Hospital and V.A. Medicine and Surgery are among the top ten employers in Kansas City. Barnes Hospital is among the top ten employers in St. Louis. The medical complex centered around this hospital and Washington University Medical School is renowned for research in cancer and other areas.

Secondary service firms, especially financial institutions and business service firms, are a key component of a business environment which fosters the growth of existing firms and the creation of new firms. Secondary service firms have grown in the past decade as manufacturing companies have spun off some of their service divisions and started outsourcing services such as maintenance, transportation, consulting etc. Some of these spin-offs have grown successfully and have started exporting their services outside Missouri, thus becoming part of the economic base. Missouri's challenge is to foster the creation and growth of secondary service firms which supports the development of its economic base.

2.5 Missouri's Tourism, Retirement and Entertainment Base

Tourism has been a fast expanding source of service jobs in the U.S. in the last decade. Tourism employment increased by 56% between 1981 and 1991 in the nation.

Missouri's scenic, historic and cultural resources, especially the lakes and springs of the Ozarks, are Missouri's eighth comparative advantage and provide numerous opportunities for attraction development. Missouri has successfully developed this potential around four regions -- St. Louis, the Ozark Mountains, Kansas City and more recently Branson -- which represents nearly two-thirds of tourist expenditures.¹¹

- o Missouri ranks 12th in the nation for acres of state park lands with 114,000 acres. It ranked 15th for the total number of visitors to state parks in 1991 with 15 million visitors.
- o Missouri has improved its performance in terms of economic benefits derived from tourism. It ranked 18th for U.S. domestic travel-generated business receipts per capita in 1990 per capita consistent with its 1989 ranking (16th) and up from 24th in 1988 and 34th in 1987.

Tourism in Missouri has not developed as fast as the U.S., with tourism employment increasing by only 41% in Missouri between 1981 and 1991, well below the national average. The emergence of a fast growing entertainment industry around Branson, however, is likely to reverse this trend.

As in every state, tourism is more important in Missouri's economy than its absolute numerical size because it provides jobs and income both directly and indirectly. In 1992, tourism generated \$8.6 billion through tourist expenditures and an estimated \$3.7 billion indirectly. The contribution of tourism to Missouri's economy is widespread. For instance, the sectors most impacted by tourism were, as expected, the service and retail trade sectors with \$3.7 billion and \$3 billion, respectively.

Tourism businesses are predominantly small, allowing for the emergence of a wide range of small enterprises. They are also located in a wide range of communities. As such, they sometimes provide a source of jobs in areas where other components of the economic base -- manufacturing and farming -- are absent and ensure the sustained development of some communities which would otherwise struggle to succeed.

The development of tourism can be limited by the existing infrastructure when the pressures exerted by a developing tourism industry begins to strain the resources of existing airports, highways, roads, and water resources. Communities and counties where tourism is growing are often rural areas whose infrastructure needs were relatively modest. With the development of tourism in rural areas like Branson, these areas need to gain access to the proper organizational and financial tools to upgrade and develop their infrastructure in order to keep pace with the tourism industry.

Just as the tourism industry fostered by the flow of visits of out-of-state people to Missouri, so too is another emerging industry -- the retirement population that is growing in areas such as the Lake of the Ozarks. This population actually complements the tourism industry in the service sectors that they impact. However, this population is not transient, as is the case with tourism, and they create a more permanent base on which the local economy can build.

The retirement base and the transfer payments it brings to the state, can be a powerful engine of economic development as best illustrated by the growth of states such as Florida and Arizona. Missouri

¹¹ Source: Economic Impact of Missouri's Tourism and Travel Industry -- 1991 and 1992, Certec Inc., October 1993

has an opportunity to be one of the states where retirees choose to settle. Missouri already ranks 10th in the nation for the percentage of people 65 years old and over with 14.1%, above the national average of 12.6%.¹² In developing the retirement base of a state, some key factors need to be addressed: infrastructure, health care facilities and services, and affordable housing.

2.6 Missouri's Rural Communities and Businesses

In many rural counties, farm income and farm population drive the local economy. People in farm-based counties rely heavily on self-employment; either on farming or on trade with the farm sector (grain elevators, feed stores, fertilizer and chemical suppliers, bulk petroleum dealers). With farm population thinning, the number of people working in support of farm activities in local towns decreases.

In general, non-manufacturing counties tend to have lower levels of personal income and are most in need of economic development. Their ability to "bootstrap" themselves is constrained by relatively low education levels, their location, local infrastructure, and financial institutions. These counties face a number of market barriers to economic growth:

- o Transaction costs: deregulation in banking, telecommunications and transportation has increased the cost of services.
- o Market prejudice: businesses tend to be established in metropolitan areas where business services, banks, and higher-education institutions are concentrated.
- o Insufficient competition: rural areas are often served by only a few financiers.

With the appropriate financing and business expertise, however, there exists a number of opportunities to create new economic growth and new jobs in rural areas in several ways:

- o The agricultural economic base can be developed.¹³ The existing agricultural base can be strengthened to achieve optimum income and employment levels through better management practices, more aggressive marketing, reduced production costs, and increased quality. New products may be developed or more processing may take place locally to create jobs.
- o The "agriculture industry" economic base can be expanded. "Agriculture industry" involves the production, processing, marketing, and distribution of crops and livestock for both food and non-food use. Manufacturing and service industries are often better suited to an urban environment. In cities, labor, supplies, water systems, transportation, communication, waste disposal, and access to markets are more readily available. Kansas City and St. Louis have had a historical position as processing and shipment centers for the agricultural economy of the region. However, manufacturing activities related to the agriculture industry such as food processing are often more efficient near sources of raw agricultural products. Similarly, producers of agricultural machinery, supplies, seed and chemicals often prefer rural areas for their quality labor force, proximity to experimental and demonstration farms, and interaction with the farmers they serve.

¹² Source: U.S. Department of Commerce, Bureau of the Census, Press Release CB92-93, April 16, 1992

¹³ Source: Margaret G. Thomas, RECOUPLE -- Natural Resource Strategies for Rural Economic Development, Midwest Research Institute,

- o Tourism/recreation resources can be developed and promoted. Missouri scenic, historic and cultural resources provide numerous opportunities for attraction development, as does rapidly growing highway traffic. Again, tourism businesses are predominantly small, allowing for the emergence of a wide range of small enterprises.
- o Business services activities can be developed by connecting rural Missouri to the economic activity of Missouri's urban areas. The development of information-intensive industries such as data-processing is often limited by the availability of dependable, low-cost labor. Labor is readily available in rural Missouri. Experience in North Dakota and Kentucky proves that full-time or part-time data-processing jobs can be created in rural areas if proper infrastructure such as "electronic highways" is available to link rural communities to metropolitan areas.

Future opportunities: To meet the challenge of developing its economic base, rural Missouri has specific needs in terms of commitment capital. Economic development is choice; it is willed from within an economy. Economic development occurs when local leaders choose to identify, invest in, and develop their own set of "comparative advantages" to enable their workers, firms, farms and industries to better compete in regional, national, and international markets.

The first and most important step in economic development is to organize local leaders to begin making decisions about the future of the economy in their area. A process for managing economic development must be established which is understood by all key leaders (business owners, plant managers, chambers of commerce, bankers, teachers, workers, religious organizations, local government officials) and to which these leaders are strongly committed for the long-term.

Local circumstances determine whether this group of individuals operates on an informal, ad hoc basis, or as a more formal public or private sector organization.

2.7 Missouri's Distinct Economic Regions

The Missouri economy is geographically diverse. Different counties have differing business profiles, levels of employment, population and income growth, labor markets, and infrastructure, and thus have different needs and opportunities.

Missouri is made up of five very different regions:

- o Farmland covers one-third of Missouri that lies north of the Missouri River. The economy of this part of the state is similar to that of its Plain States neighbors such as Nebraska, Kansas and Iowa. It relies heavily on agriculture and agricultural services.
- o The Ozark Mountains that lie south of the Missouri River have poorer soil. It has become one of Middle America's greatest recreation areas, supported by its natural resources and the musical activity of the Branson area.
- o The "Bootheel" formed by the seven counties between Tennessee and Arkansas has flat delta, cotton-growing land. It also has a significant number of manufacturing jobs.
- o St. Louis is the last city of the East, a gateway to the West symbolized by the Arch. St. Louis serves as headquarters for some of the nation's largest companies and as one of the

distribution centers of the nation. Its manufacturing activities relies heavily on two major sectors which have suffered sharp blows in the past years: the auto industry and defense-related firms.

- o Kansas City is the first city of the West, at the heart of the farm belt. Its location within 1,500 miles of every point in the continental United States gives it superior marketing and distribution capabilities: it is one of the largest agricultural distribution centers in the country.

Missouri's two largest cities have culturally little in common with the rest of Missouri. They are, however, close economically.

- o Rural areas of the state have become more and more industrialized. Disparity in employment and income between rural and urban areas exists but is relatively smaller than a lot of other states. In fact, Missouri ranks 13th in the nation for rural/urban homogeneity in employment and income distribution.¹⁴ Missouri's manufacturing base is broadly distributed throughout the state.
- o Giant agribusiness corporations such as Ralston Purina and Monsanto in St. Louis tie the city to the countryside. Kansas City is one of the largest agricultural distribution centers in the country and serve the six states that form the agricultural center of the country (Missouri, Kansas, Oklahoma, Iowa, Nebraska, Arkansas).

Despite these links between urban and rural areas, Missouri needs to address the specific needs of three kinds of counties to foster the creation and the development of globally competitive firms:

Urban core counties are those which are designated by the U.S. Department of Commerce as metropolitan statistical areas (MSAs). They include the five-county St. Louis MSA, the six-county Kansas City MSA, the two-county Joplin MSA (Jasper and Newton), the three-county Springfield MSA and Columbia. These counties account for almost 70% of the total number of manufacturing firms in Missouri and also represent most of Missouri's export service-producing industries such as distribution services, telecommunication, and health services. Metropolitan counties are generally the best-served counties in Missouri by commercial banks for financial capital, and by educational institutions for innovation capital and for training. They also benefit from a modern infrastructure. Businesses in metropolitan areas tend to be large and to include firms in both traditional and high-tech industries. Needs are therefore very diverse. Metropolitan areas, however, also have specific needs which stem from the mix of their economic base:

- o More than 79% of the 410 high tech manufacturing firms are located in metropolitan counties. These firms have specific needs in several areas. Along with traditional financing tools, some may also require higher-risk, higher-return forms of financial capital such as venture capital and mezzanine capital. Similarly, they often require more sophisticated forms of innovation than traditional manufacturing firms such as technology development and technology commercialization.

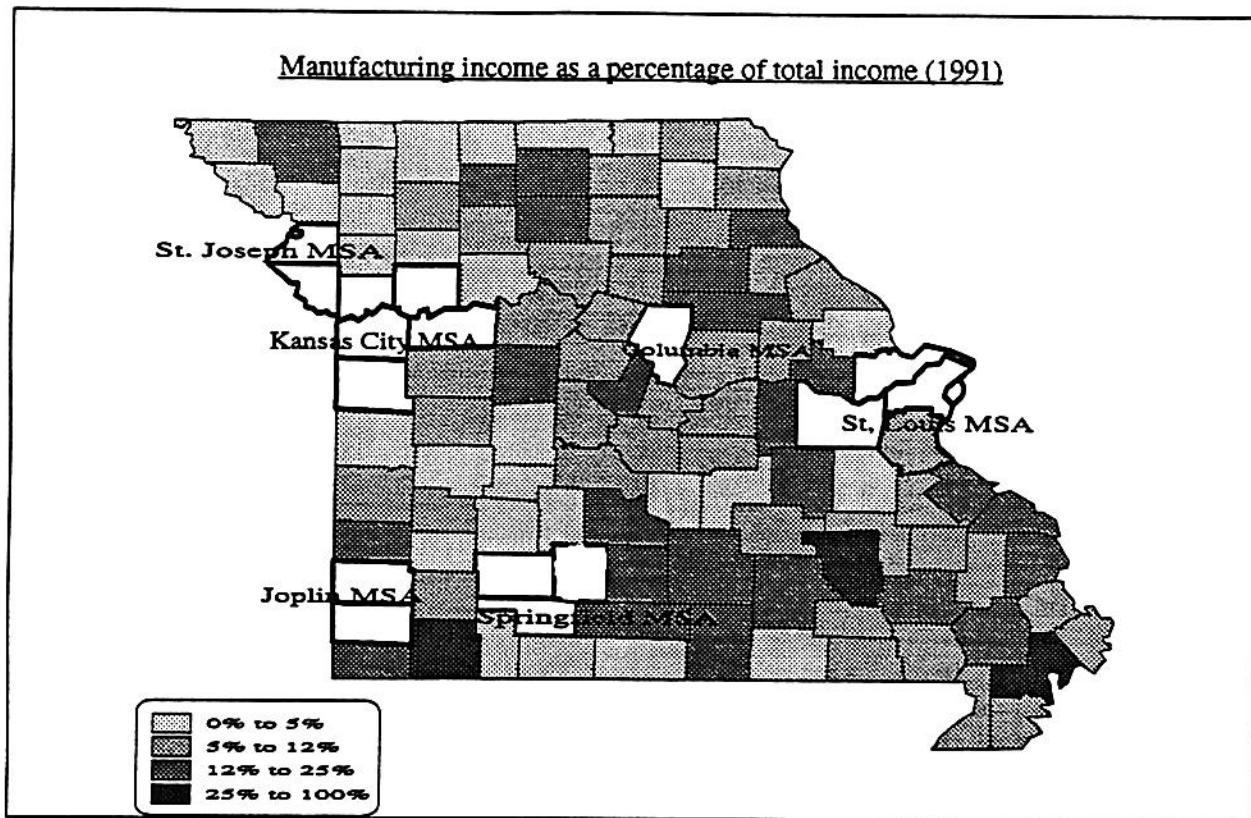
¹⁴ Source: The 1993 Development Report Card for the States, CFED, Washington DC., 1993

	Number of high tech firms	Percentage of high tech firms
Columbia MSA	10	2.5%
Joplin MSA	12	2.9%
Kansas City MSA	72	17.6%
St. Joseph MSA	7	1.7%
St. Louis MSA	209	51.0%
Springfield MSA	15	3.7%
Total	325	79.3%

- o Most of Missouri's defense-related industry is located in metropolitan counties. More than 80% of Department of Defense spending in Missouri is concentrated in the St. Louis area. McDonnell Douglas represents more than 74% of the total amount contracted to Missouri firms. Several thousand workers in the defense-related industry have already been laid off and thousands more may be laid off. These lay-offs require the establishment of some specific training programs to help workers find jobs in other industrial sectors.
- o Building on the central position of Missouri, Kansas City and St. Louis have become major distribution and transportation centers. Kansas City is the second-largest rail center and the second leading freight-car handling center in the nation. St. Louis is the second-largest inland port, the third-largest rail hub and one of the largest trucking centers in the country. Missouri needs to regularly upgrade its physical infrastructure if it wants to maintain these positions.

Non-metropolitan manufacturing counties derive a substantial share (more than 12%) of their total income from manufacturing.¹⁵ The majority of these 28 counties are located in the southern part of the state.

¹⁵ Source: Personal Income Tables (CA5.2), U.S. Department of Commerce, Bureau of Economic Analysis, May 1993



Manufacturing employment in these counties depends on a small number of firms (average of 35) in traditional industries. More than one-half of these firms are in lumber and wood products, printing and processing and industrial machinery such as metal working machinery and equipment. Most of these firms are also smaller than in metropolitan areas. If these counties are to successfully develop their local economy, they need to provide what these firms require:

- o Basic innovation support, mostly the introduction and adaptation of off-the-shelf technologies and state-of-the-art management practices;
- o Basic financial capital, mostly short-term loans, long-term loans and secured subordinated loans;
- o Basic training for their workers related either to the purchase of new equipment or to the implementation of new management practices;
- o Management assistance to help them understand financial, legal and technical issues and increase their operating efficiency.

Rural non-manufacturing counties account for the remaining 68 Missouri counties. These counties generally have a small number of small manufacturing firms (average of 23). Manufacturing income is complemented by two other economic base sectors, agriculture and tourism.

- o In many rural counties, farm income and farm population drive the local economy, especially in the Northern part of the state where the rich soil is ideal for farming and ranching. In 19 counties, farm income is higher than manufacturing income. The challenge facing these counties is to find an alternative economic base as the number of jobs provided by agricultural activities decreases.
- o In some other rural counties, the local economy is driven by tourism. Tourism is built either on natural resources such as the more than 17,000 acre Lake of the Ozarks State Park, or on musical entertainment such as the Branson area. The challenge facing these counties is to develop an infrastructure which will both preserve and enhance their natural resources and provide easy access to tourist facilities.

Section

3

3.0 STRATEGIC ACTION TO IMPROVE MISSOURI'S INNOVATION, BUSINESS MODERNIZATION AND TECHNOLOGY RESOURCES

3.1 The Market For Innovation, Business Modernization and Technology Resources In Missouri

Innovation does not mean just new high technology products and services undertaken by new technology-based firms. More often, innovation provides new ways to make old products and services more efficiently and of higher quality.

- o Business Modernization is the process by which firms increase their competitiveness by using current knowledge to increase quality, productivity and sales, reduce costs and retain quality jobs. This involves technical, management and business planning, marketing, product development, financial and training issues.
- o Technology is the core of our technical knowledge that can be applied to develop new and better products, processes and services, and more effective management.
- o Innovation seizes the opportunity to actually use this non-technical and technical knowledge to create new value. *"Innovation means creative, state-of-the-art approaches to markets, industries, business organizations, production technologies, and novel forms of partnership between labor and management, the public and private sectors, and the state's universities that together create new heights of productive efficiency and profits."*¹

Technology without innovation means nothing. High-performance firms in Missouri must be both highly innovative and have access to globally competitive technology. They must also keep modernizing to keep pace with their competitors. This means the implementation of new management techniques and styles, as well as new technologies.

In order to be globally competitive, high-performance firms need access to three distinct kinds of innovation and technology resources: business modernization and technology application, technology commercialization and technology development.

¹ Committee on Technology and Innovation, 1986

DEFINITIONS

Business Modernization & Technology Application (sometimes called technology extension). Business Modernization is the introduction and adaptation of state-of-the-art management practices in a number of fields such as scheduling, inventory management, marketing, product development, training, etc. to improve the quality, productivity, and profitability of an existing firm. Technology Application is one of the several components of Business Modernization. It is the introduction and adaptation of off-the-shelf technologies to improve the quality, productivity, and profitability of an existing firm. By rough estimate, 85% of Missouri's 8,000 manufacturing firms need basic business modernization services now; probably only 15% are able to use sophisticated technology application resources. The task of this Strategic Action effort is to attend to all of these real needs now, and move more Missouri firms to high-performance capacity.

Complex production processes, and the need for management and work force training, create demand for a private/public/academic partnership approach to business modernization and technology application. This approach is now being pioneered by the National Institute of Standards and Technology (NIST) and new state technology institutions.

Technology Commercialization is the process of bringing investment grade technology out of a business, university, or federal laboratory for first-run application in the market place. This can either be done in large high-performance firms, such as Monsanto, McDonnell Douglas, Marion Merrell Dow Labs and Sprint, in smaller companies, or by creating a new firm. Many new firms are started this way as spin-offs of larger firms, or by creating and marketing commercial applications for laboratory concepts and building a company around those applications. These start-up firms often need financial, marketing and management expertise to be successful. Technology commercialization also needs to be financed. Large firms use retained earnings; small firms need external capital investment.

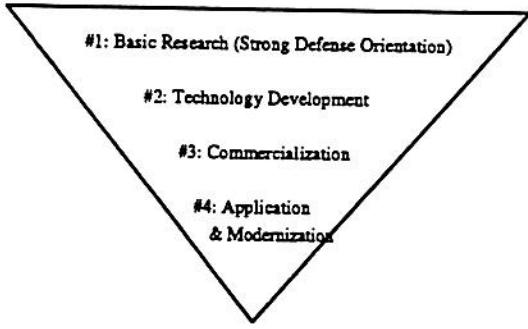
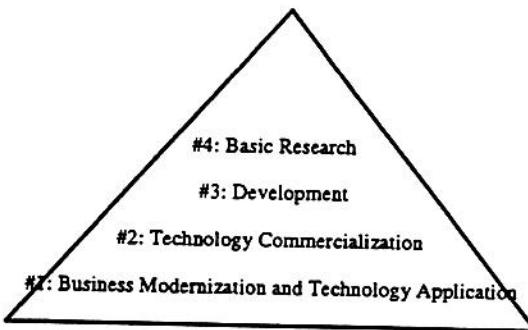
Technology Development is strategically focused, applied research aimed at developing investment grade technologies essential to market competitiveness. For technology development to be successful two conditions must be met: (1) Missouri needs a broad technical capacity and expertise in its laboratories and research facilities undertaking basic research. This basic research does not necessarily create direct commercial value, but it will generate findings that support a broad array of specific technology applications in many different industries. These applications will potentially create intellectual property and investment grade technology which can be commercialized; (2) The private sector must be able to participate in applied research with the scientific laboratories, either by directing research efforts or by working cooperatively. States have learned to make technology development eventually self-financing through royalties and equity positions in companies that use the technology, even if publicly funded grants and operating support are necessary at the beginning of the process.

Technology commercialization and development are useful to firms located in Missouri's urban centers, but business modernization and technology application are critical to firms located throughout Missouri. They are generally well implemented by large firms but can be particularly valuable to small and medium-sized manufacturing and food processing companies located in smaller rural cities and towns.

The old, post World War II, Cold War Industrial Age approach to technology started with big science and trickled down to commercial application. The new Information Age approach to technology and innovation begins with small incremental applications of business modernization to thousands of existing small firms and works upward.²

² Branscomb, Harvard Business Review, March/April 1992

This new approach in technology and innovation is graphically described below:

The Old Way <u>Pipeline to Breakthrough Strategy: Top Down</u>	The New Way <u>Culture of Innovation Strategy: Bottom Up</u>
<p>Federal and state funding creates a "pipeline" of basic research which spawns new products and technologies and modernization in the commercial sector. Policies and institutions are heavily weighted toward the basic research end of the pipeline.</p> <p>Top Down</p> 	<p>All industries modernize and create demand for incremental innovations and advances in knowledge, often across disciplinary fields, which spawns new basic research funded by private/public investments.</p> 

Limits:

1. The old technology system is too slow to meet foreign commercial competition. In the '70s and '80s, American firms lost their comparative advantage in the application of innovation to existing products and services.
2. Today, industrial competitiveness depends at least as much on incremental innovation as on major breakthroughs in basic research.
3. The old top down structure inhibits effective, market-oriented collaboration.

The technology strategy of most states in the 1980s was a top down strategy.

Actions:

1. Improve ability of firms in all industries to identify and absorb innovation.
2. Create market-driven policies which encourage incremental innovation to be pulled out of labs by private sector firms, rather than only pushed out as breakthroughs to industry.
3. Foster collaboration between the academic and private sectors, and across disciplines.

Missouri's Innovation strategy for the 1990s must begin by assisting its existing firms to deal with global competition.

This bottom up pyramid translates into three distinct Missouri markets for innovation and technological services: business modernization and technology application, technology commercialization and technology development. These three market opportunities summarize the findings of the Market Research, Volume II of this Missouri Strategic Action Plan.

Market for Business Modernization & Technology Application: Many of Missouri's 8,000 manufacturing firms can improve their performance through management innovations in production, finance and marketing, and the application of technology. These innovations include the application of computers to design, manufacturing, statistical quality control, inventory control, niche marketing, and management itself. For example, Missouri's food industry represents nearly 11% of Missouri's manufacturing jobs. Many small food processing plants can substantially improve their quality, productivity and profitability, if they have ready access to performance-based business modernization and technology application resources.

Currently, business modernization and technology application services are provided by a number of institutions in Missouri such as:

- o The former Missouri Corporation for Science and Technology (now replaced by the Missouri Business Modernization and Technology Corporation) funds four Innovation Centers located on university campuses. These Innovation Centers were funded by the Missouri Department of Economic Development with approximately \$1 million in 1992. Their performance is uneven. The more successful centers, such as the Enterprise Business Assistance Center in Rolla, and the Center for Business Innovation in Kansas City finance up to 65% of their costs through client fees.
- o The Mid-America Manufacturing Technology Center (MAMTC), an affiliate of the Kansas Technology Enterprise Corporation, opened a regional office in Kansas City in January 1992. MAMTC was established in 1991 to help small manufacturers expand by increasing sales and productivity, reducing costs and improving quality. Field engineers help small manufacturers in thirteen counties in Northwest Missouri to grow their businesses.
- o The Silicon Prairie Technology Association provides services to grow technology-based industries in the Kansas City region. The Association is a trade group and organizes seminars for entrepreneurs. It is funded by member companies' dues.
- o The 13 Small Business Development Centers provide managerial and technical assistance to small businesses, including technology transfer and research. The program is funded jointly by the Small Business Administration and, since legislation was passed in 1992, by the Missouri Small Business Development Centers Fund.
- o The University Extension System provides a number of technology assistance programs such as consultation services to small businesses by the 20 Business and Industry Specialists, the two technology centers located in Rolla and Warrensburg and the Trade Adjustment Assistance Center (TAAC) located in Columbia.

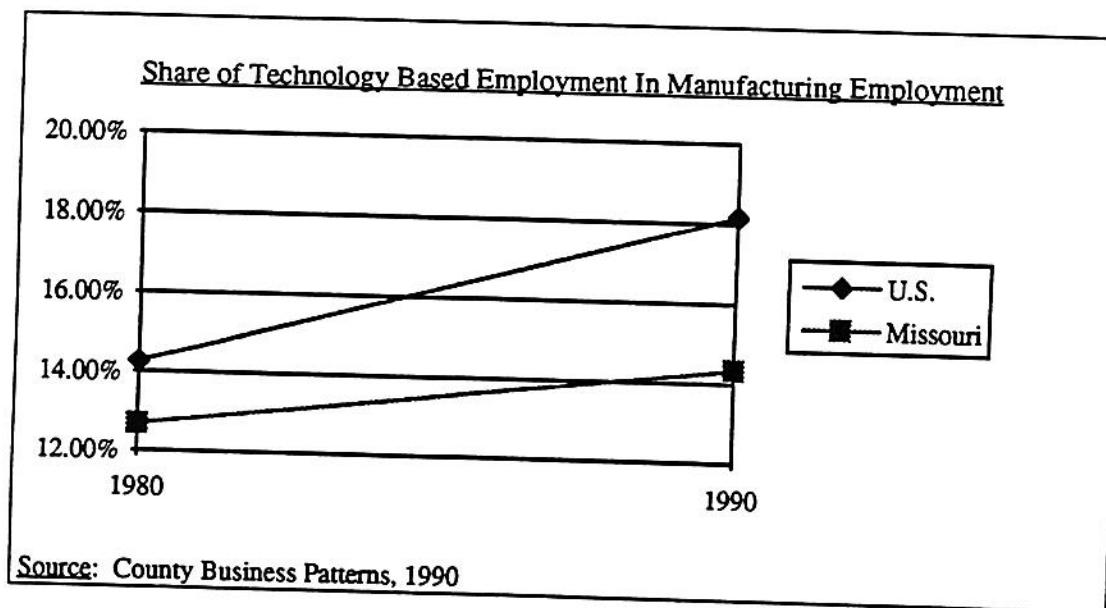
With the array of these types of resources available to Missouri, an effort could be made to integrate and efficiently network these services and provide firms with an efficient access route to these modernization pools. Missouri has an extraordinary opportunity to create a powerful statewide business modernization and technology application system for all of its manufacturing firms located in such cities and towns as Macon, Maryville, Moberly, Sikeston, St. Joseph, St. Louis, or Springfield, as well as Kansas City and Rolla. Such a performance based approach could be undertaken in a way which is unique to Missouri's needs, and based on the best practices of other states.

The Market for Technology Commercialization: More than 400 technology based manufacturing firms mostly based in urban areas could profit from improved technology commercialization. Technology commercialization is equally important to increase Missouri's rate of new firm formation.

On the one hand, Missouri has been losing ground in technology-based industries in the past decade. For example, national employment in a number of technology based industries³ grew from 14.3% of total manufacturing employment in 1980 to 18.2% in 1990. In the same decade, technology employment in

³ This includes such industries as: drugs, computer and office equipment, communications equipment, magnetic and optical recording media, selected electrical machinery and equipment, aircraft and parts, guided missiles and space vehicles, and measuring, analyzing and controlling instruments; photographic, medical and optical goods

these same industries grew only from 12.7% to 14.3% in Missouri bringing Missouri to the 1980 U.S. level a decade later in 1990.



On the other hand, Missouri's agribusiness, pharmaceutical, chemical, aerospace, and telecommunications firms and its great universities create a substantial reservoir of research and potential investment-grade technology. However, the Market Research indicates that Missouri's private/public sector investment in technology development does not currently create a payoff in new firms and technology commercialization. For instance, Missouri's medical centers in St. Louis, Kansas City, Columbia, and Springfield produce the same high-quality, specialized medical care as medical centers in Boston, San Francisco, New York or Texas, but have not created comparable rates of spin-off firms in biomedical products.

Missouri, nevertheless, has a greater concentration of private and university investment grade research than Arkansas, Iowa, Kansas, Kentucky, Nebraska, Oklahoma, or Tennessee. In contrast, Missouri has only a few mechanisms to commercialize this technology to create substantial new wealth and jobs. For instance:

- o The University of Missouri - Kansas City has taken an equity position in the Center for Business Innovation, and the center has, in turn, shifted to an improved approach to technology commercialization. For example, the center manages a seed capital fund which has resulted in \$3 million being invested in start-up companies.
- o The Technology Commercialization Task Force combines representatives of all the major faculty research at University of Missouri - Kansas City, the private sector, and other technology and capital formation organizations and is creating new ways to look at technology commercialization and transfer process itself from university to private corporations.
- o A coalition of leading technologists from the private sector and universities and representatives of government have come together in Greater St. Louis to form the St. Louis Critical Technologies Task Force. This Task Force is currently addressing the issue of how to create greater investment-grade technology coming from private sector laboratories and university sponsored research, and translate that into commercializable technology that will generate economic growth for the region.

These last two initiative holds great promise and provides a model for other metropolitan areas. The opportunities for technology commercialization are great if Missouri's private, public and university sectors can agree on an efficient mechanism and work together to deliver results.

The Market for Technology Development: Missouri's 400 technology based manufacturing firms will benefit from improved technology development. This technology originates in public and private universities, federal laboratories and other large technology firms. As with technology commercialization, an investment in increased technology development can lead to increased new enterprise formation as well.

A major funding source for technology development historically has been the Department of Defense, which has managed the overwhelming majority of the federally funded technology programs (87% of the total funding for FY 1993). These programs fund principally pre-competitive research and technology development. Missouri's defense-related manufacturing firms have been successful at accessing these funds: Missouri ranked 15th nationally for the percentage of federal obligations for R&D in 1989, the last year for which these statistics are available. Although these resources are declining in their application to defense, these resources are being rapidly re-deployed to civilian application. Missouri must reorganize itself to take maximum benefit of these federal shifts. This Strategic Action Plan focuses on that shift.

A second source of technology resources is Missouri's universities. Facilities found at Washington University and St. Louis University, the University of Missouri in Columbia, Rolla, Kansas City and St. Louis, and the cluster of colleges and universities in Springfield, are just a few examples of the quality of technology resources that are to be found in Missouri. In fact, Missouri's academic institutions increased their federal R&D obligations by more than 74% between 1986 and 1991 and now rank 13th in federal funding in the nation. However, the commercialization process seems to remain stalled at the gates of the universities, since this technology remains academic, with very few products finding their way in the commercial market.

Finally, Missouri is unusually fortunate to have a number of large firms in its major metropolitan centers which are world leaders in their technological fields. Monsanto and Marion Merrell Dow are just two of many examples.

Despite an excellent research base, Missouri does not generate large numbers of product innovations or related technology-based companies:

- o As one indicator, in 1991 Missouri ranked 27th for the number of patents issued per million residents (155), well below the national average (218)⁴.
- o Another key indicator ranks Missouri firms 32nd in U.S. Small Business Innovation Research (SBIR) grants with \$0.40 per capita, only one fourth the national average of \$1.76. The SBIR program is a highly successful federal R&D program designed to create jobs, and increase productivity and innovation among small firms. Missouri's share of SBIR awards has not changed significantly over the years: it increased from 0.4% and 12 awards in 1986 to 0.5% and 16 awards in 1991⁵. It should be noted, however, that the Technology Commercialization Task Force and the Center for Business Innovation in Kansas City have started a joint initiative to aggressively generate new SBIR grants for Missouri firms.

⁴ Source: Patent and Trademark Office

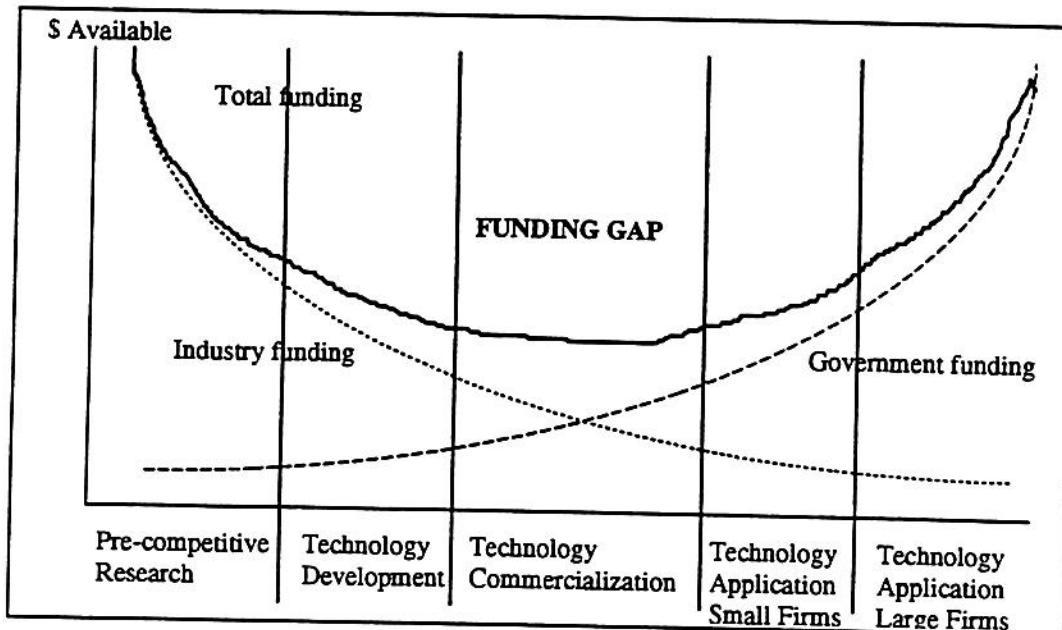
⁵ Source: Small Business Innovation Development Act, Office of Innovation, Research and Technology, 8th Annual Report, July 1991

- Finally, and most importantly, Missouri consistently hovers around the lowest one third of states in new business formation (35th in 1992), and especially low for major industrial states.

A requirement for the success of technology development is to identify the company and the methods by which the technology developed will be taken to market before beginning the technology development phase. The thinking on commercialization needs to take place in parallel rather than after technology development. Successful companies develop the product concept first, establish that the market exists and then ask the research lab to develop the product.

Overall Level of Funding: Finally, Missouri must substantially increase the scale of its investment in innovation and technology if it is to be a viable competitor. Missouri faces a gap in technology financing similar to the technology gap which exists at the national level:

- Industry funding focuses mostly on technology application projects in large firms. These firms have large budgets for technology application. A smaller percentage of small firms also invest in new technology production processes and management techniques, especially those firms which are subcontractors for large, technology-based firms. Finally, manufacturing firms also invest in technology commercialization to develop new products and bring them into the market place. The amounts invested in technology commercialization, however, are much smaller than those invested in manufacturing modernization.
- Government programs focus mostly on pre-competitive (or basic) research. These programs channel research funding to universities and to public laboratories. A few, very small specialized programs, such as the SBIR program, are publicly funded to foster development and commercialization, but these are very limited.



Filling this gap would require that the state of Missouri increase its investment in technology and innovation programs from the present level of \$2.25 million.

Although this is a national problem, a number of states have aggressively addressed this issue directly. These states set a measurable standard for Missouri.

- o The seven leading states in FY 1992 in per capita state appropriated investment in innovation and technology invested an average of \$9.99 per person. Missouri would have to invest \$51.9 million a year in state appropriated resources to keep pace with these states.
- o An alternative estimate of Missouri shortfall is reached by summing up the individual funding figures for each program area of technology and innovation investment based on the most effective programs in the nation (see Market Research, Volume II). Missouri would have to invest \$46.6 million annually to keep pace with these best practice programs.

3.1.1 Mission

The mission should be to create a high-performance business environment which (1) increases Missouri manufacturing firms' competitiveness by providing them with access to up-to-date management techniques and technology and (2) fosters the creation and the expansion of technology-based firms.

The mission will be pursued through a private/public/academic partnership that uses leadership, investment, and changes in public policy to ensure the creation and expansion of innovation-driven firms. The 87th Missouri General Assembly House Bill 566 authorizes the Governor to establish a private not for profit corporation named the "Missouri Business Modernization and Technology Corporation". The purposes of the Corporation are to improve the development of science and technology and to promote business modernization through the transfer of science, technology and quality improvement methods. Missouri's logical step is to build on the Missouri Business Modernization and Technology Corporation to create this partnership.

Best practices in other states clearly indicate that the Corporation and each of its programs should operate according to the following five principles. The Corporation should be:

- o Market-driven. Up-to-date non-technical and technical knowledge must be pulled out of firms and universities by the private sector; it cannot be pushed out by government or universities. A bipartisan group of key private sector business modernization and technology leaders must play a central role in the design and implementation of the Corporation. These leaders must form a clear majority of the board.
- o Performance-based. Each initiative must set clear performance goals and be subject to rigorous accountability. The Corporation's management must be hired according to the highest current standards for similar institutions in other states. All contractors -- private, public or university -- must operate under performance-based contracts.
- o Effective in making businesses more productive in every industry from agriculture to telecommunications. Innovation must be more than new product development in a few technology-based industries; it must impact a large number of firms in every economic base industry in every part of the state.
- o Focused on "continuous, incremental improvements in function, cost and quality," not just the big bang for university research.
- o Responsible for networking the state and creating a seamless system of resource providers throughout Missouri. Innovation providers within Missouri each possess expertise in different areas, which complement one another. The Corporation must ensure that the various providers are not competing against one another, but against their own

performance standards and that they network with one another. Because Missouri's manufacturing base is broadly distributed throughout the state, the Corporation must ensure that any firm in any location in Missouri can easily access business modernization and technology services.

3.1.2 Performance Goals

We are currently drafting a range of initial Performance Goals which might be used to measure the success with which Missouri's technology and innovation resources are pulled out into the marketplace. These are first drafts for discussion:

Technology Application Performance Goals:

- ✓ Increase the number of firms which made significant gains thanks to business modernization and technology application services from __ in 1992 to __ in 1996 and __ in 2004.
- ✓ Increase the real wages of workers in serviced firms from __ in 1992 to __ in 1996 and __ in 2004.
- ✓ Increase the geographic distribution of serviced firms from greater Kansas City in 1992 to all nine congressional districts in 1996.
- ✓ Increase the export sales of serviced firms from __ in 1992 to __ in 1996 and __ in 2004.
- ✓ Increase the number of serviced firms which are ISO 9000 qualified firms __ in 1992 to __ in 1996 and __ in 2004.

Technology Commercialization Performance Goals:

- ✓ Increase the number of federally funded SBIRs from 16 in 1991 to 160 in 1996 and 500 in 2004.
- ✓ Increase the number of university patents licensed for commercialization from __ in 1992 to __ in 1996 and __ in 2004.
- ✓ Increase New Business Formation from 5.7 per 1,000 workers in 1992 to __ in 1996 and __ in 2004.

Technology Development Performance Goals:

- ✓ Increase the total value of sponsored research for Missouri private and public universities from __ in 1992 to __ in 1996 and __ in 2004.
- ✓ Increase Missouri's rank in number of patents issued from 27th in 1991 to __ in 1996 and __ in 2004.
- ✓ Increase Missouri's commercial research and development from __ in 1992 to __ in 1996 and __ in 2004.

3.1.3 Strategic Actions

We propose that the Missouri Business Modernization and Technology Corporation develop three strategic actions:

- o Business Modernization & Technology Application: Create a mechanism that improves manufacturers' access to expertise in management and technology. This mechanism will build on those proven institutions which have a track record of delivering results and are likely to generate new federal resources in Missouri in 1994. The management of this structure will be a small, lean organization which uses coordination, communication and leadership among existing market-driven private, public and academic business and technological service providers across Missouri to fulfill its mission.
- o Technology Commercialization: Create a mechanism that will move technologies from the universities and public and private laboratories into the market place. This could be done by establishing technology commercialization corporations in 1994 and by establishing a rigorous set of performance goals for the existing Innovation Centers.
- o Technology Development: Create a fund that will invest in applied research projects developed by university/industry partnerships in 1995. These projects should have the potential to generate a stream of investment-grade technologies of strategic importance to the Missouri economy.

Each of the three key strategic actions is described in greater detail below: Technology Application, Technology Commercialization and Technology Development.

3.1.4 Organizational Structure

The Missouri Business Modernization & Technology Corporation, as enacted by the 87th Missouri General Assembly in House Bill No. 566, could be implemented as a public/private/university partnership, subject to refinements and changes which could be legislated or incorporated in articles and by-laws adopted for the corporation.

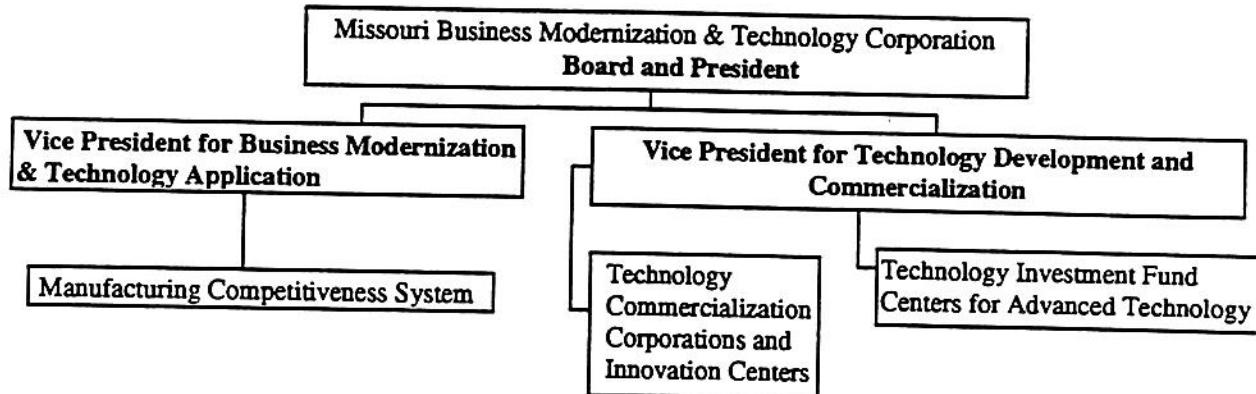
Twenty years of operating experience of technology corporations have established a set of guidelines with regard to both structure and process which are likely to ensure success. These include the following:

- o The Board of Directors should have the following properties:
 - The size should be small: a range somewhere between 11 and 15;
 - A clear majority of private sector technology leaders must be carefully chosen to reflect key technologies, industries, sizes of firms and geographic location;
 - Key cabinet secretaries, such as the Director of Economic Development, must participate;
 - Senior leaders from both legislative houses and both parties need to be represented;

- Key leaders from public universities and private universities must be involved in the design and serve on the board; these positions should not automatically be filled by the university vice presidents for sponsored research;
- The Board should be active; any member who misses three meetings is immediately removed from the Board;
- The Chair is a private sector person chosen by the private sector with the approval of the Governor; and
- o The Board of Directors should evolve out of a working group which is informally organized to develop the mission, performance goals, programs and priorities for the Missouri Business Modernization & Technology Corporation. Experience points out how crucial it is that the implementors be engaged in the design, and the designers in the implementation.

Private, public and university leaders are being identified who are committed to developing the strategic actions in each of the three technology areas. They will form the basis for the Missouri Business Modernization & Technology Corporation working group.

The Missouri Business Modernization & Technology Corporation should hire a President through a national search to work with the Board to implement the technology application, technology commercialization and technology development programs. Current experience in other states indicates that this CEO will require a strong six-figure base salary, a significant (20%-40%) bonus tied to performance, and possibly a portion of a carry in a seed and early-stage fund. The overall structure of the Missouri Business and Technology Corporation could be as follows:



This structure is described in greater detail below.

3.1.5 Financial Structure

The Missouri Business Modernization & Technology Corporation will receive appropriations from the Missouri Legislature. This state funding will be systematically leveraged:

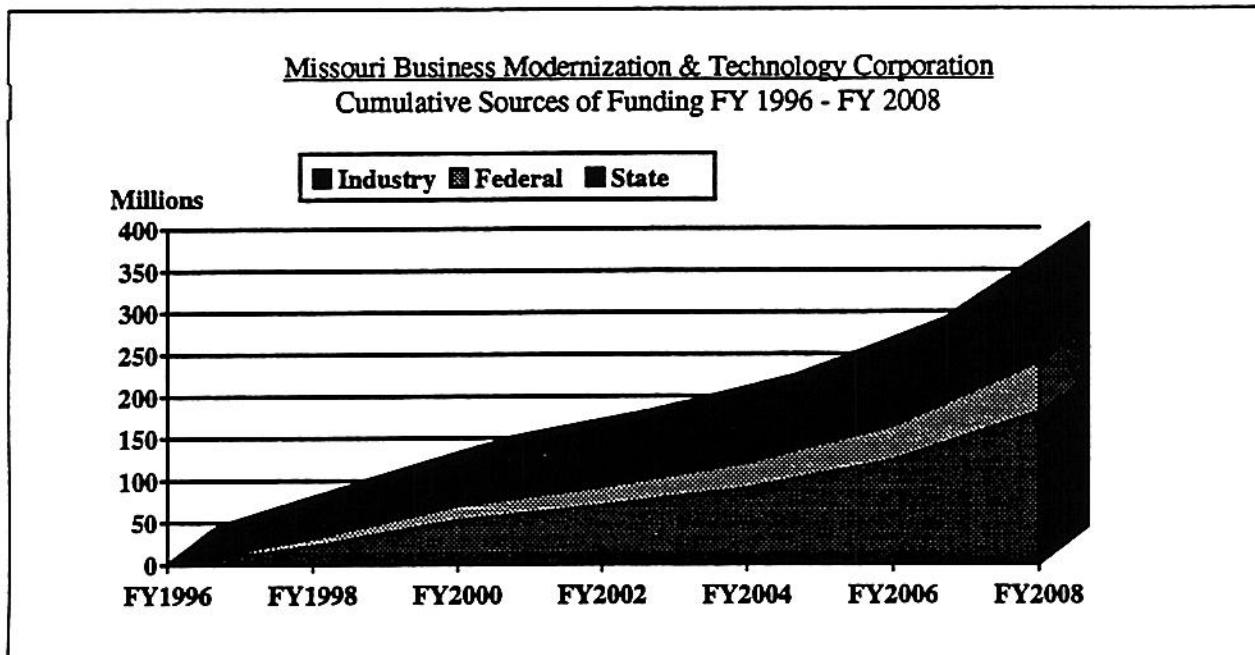
- o Funding from various Federal agencies such as the National Institute for Science and Technology (NIST), the Small Business Administration (SBA), and the Department of Defense through its Technology Reinvestment Program (TRP) will be sought to match state funding, especially for business modernization and technology application programs. This will require

that the Technology Corporation and its affiliates cultivates their relationship with Federal agencies;

- o Matching funds from the private sector will be required for some of the programs, especially applied research projects, to ensure that state funding is channeled to projects to which the private sector is committed.

In addition, the Missouri Business Modernization & Technology Corporation will seek to make a return on its investments whenever possible. For instance, successful technology commercialization programs will provide a pay back to the Technology Corporation through royalties.

Based on these assumptions, the budget of the Technology Corporation should grow ten-fold within the ten coming years. Most of the growth is expected to be provided by Federal and private sector funding.



3.1.6 Strategic Action Steps

The following steps need to be taken:

- o January - February, 1994: Establish the Missouri Business Modernization & Technology Corporation working group.
- o February - May, 1994: Work on changes in the Missouri Business Modernization & Technology Corporation legislation and on the performance goals of the Technology Corporation. The working group will also refine the mission, performance goals and programs in each of the three technology areas.
- o February - May, 1994: Draft and pass necessary changes to the Missouri Business Modernization & Technology Corporation legislation.

- o July, 1994: Appoint the Board of the Missouri Business Modernization & Technology Corporation.
- o July - September, 1994: Conduct a national search to hire the President of the Missouri Business Modernization & Technology Corporation according to the standards for comparable positions in similar institutions in other states.

3.2 Business Modernization & Technology Application

The Missouri Business Modernization & Technology Corporation will create a Manufacturing Competitiveness System. This mechanism will expand access by Missouri's small and medium-sized manufacturers to critical financial as well as managerial, technological, and scientific expertise essential to international competitiveness. This mechanism will expand manufacturers' access to expertise in management, innovation and technology.

The main impacts of this outlet system will be as follows:

- o Create uniform standards of quality, timeliness, and responsiveness by service providers to Missouri manufacturers. Just as a shopper can go to any True Value Hardware Store nationwide with confidence in the quality and range of products available, Missouri manufacturers will use the Manufacturing Competitiveness Centers with uniformly strong confidence statewide.
- o Expand access by manufacturers to a broader range of services by means of better organization and quality control. The Manufacturing Competitiveness Centers will take a proactive and holistic approach to assisting manufacturers. The approach includes a combination of the following: engineering/technical issues, management and business planning, marketing (industrial marketing and export marketing), product development, access to financial resources and expertise, training and human resources.
- o Help to generate substantial federal and private sector leverage for technology application in Missouri by establishing a single umbrella budget for purposes of federal matching dollar requirements.

This mechanism will not duplicate services now provided by private accounting, engineering, and consulting firms, but will provide basic services which actually expand the market for these private firms. An important emphasis would be "defense conversion" assistance to areas that have heavy concentrations of defense-based manufacturers (particularly firms in the St. Louis metro area) to help them diversify into the commercial market. Services for these firms are similar to those described above, although they need a heavier emphasis on the marketing, management and financial issues.

3.2.1 Organizational Structure

The Manufacturing Competitiveness System will be a service of the Missouri Business Modernization & Technology Corporation, developed in coordination with the financial capital actions described in this Strategic Action Plan. This system will build on those proven institutions that have developed high confidence in the National Institute of Standard and Technology (NIST) because of their record of operating success in providing realistic, hands-on manufacturing modernization services. The centers will assure high quality service to manufacturers and use of all appropriate resources. They will include a team of manufacturing professionals and engineers who can: proactively market a comprehensive set of services to manufacturers, assess their needs, develop a solution, locate the appropriate resources for the manufacturer (either themselves, parts of the infrastructure or private consultants), and manage the project. It is vital that these professionals have experience in small manufacturing companies and have engineering, business and marketing degrees.

The Manufacturing Competitiveness Centers would essentially provide assistance through three mechanisms:

- o hands-on consulting for individual manufacturing firms -- resolution of immediate problems (troubleshooting machine problems, helping maintain large customer contracts), formal assessments and benchmarking of business, location of technical information and vendors, product design and development, guidance in implementing quality improvement programs and design and implementation of business processes (activity-based costing, inventory control, plant layout, marketing, shop floor control, etc.)
- o industry group programs -- companies can learn from each other (and leverage the system's resources) through: seminars and workshops; roundtables; supplier development programs; marketing cooperatives, etc.
- o equipment and software demonstration -- used for training and selection of appropriate equipment and software before companies purchase it. Share manufacturing is also important, as is testing and analysis of products and processes.

The Manufacturing Competitiveness Centers would need to be decentralized to take full advantage of local resources and become a true part of the community. In addition, different regions of the state have different characteristics, needs and resources. At the same time, it is important that all of the Manufacturing Competitiveness Centers have a management system that ensures that everyone is working toward similar goals, customers receive consistent and high quality service and the existing infrastructure is leveraged as much as possible.

The Missouri Business Modernization & Technology Corporation will contract with Manufacturing Competitiveness Centers to become part of the Manufacturing Competitiveness System and deliver services in their respective markets and regions across the state. Applicants to become Manufacturing Competitiveness Centers are expected to be existing technology application institutions in Missouri such as the Enterprise Business Assistance Center in Rolla, the Missouri Manufacturing Research and Training Center and the Small Business Development Centers, University Extension Offices, and private contractors. Contracts with these outlets will be performance-based, subject to renewal or expansion based on achievement of performance objectives. As a result, it is expected that the reputation of this effort will quickly earn the confidence of Missouri manufacturers across the state.

Legislation for existing technology application programs, such as the Innovation Centers (RSMo 348.251 to 348.300), the Small Business Development Centers Act (RSMo 620.1000 to 620.1007) and the Productivity Institute Act (RSMo 620.625) and any other technology application programs receiving state funding, will need to be modified so that these centers and programs receive funding only if they are licensed as Manufacturing Competitiveness Centers.

During the first six months of start-up, the Manufacturing Competitiveness System will be managed by a Vice President for Technology Application hired through a national search by the Missouri Business Modernization & Technology Corporation Board. An additional professional will likely be necessary to oversee management of the Manufacturing Competitiveness System as it moves to full operation. Staff necessary to manage the Manufacturing Competitiveness System is not expected to exceed two full time professionals in the near future.

3.2.2 Financial Structure

Again, the start up of the system could be rapidly expedited by close operating relationships with Technology Application systems such as the Mid-America Manufacturing Technology Center (MAMTC) that have a proven track record with federal funding resources. Initial funding for the Manufacturing Competitiveness Center will most likely come from NIST and ARPA through the ongoing TRP process, which could be matched by a contribution from the Missouri Business Modernization & Technology Corporation, and an in-kind contribution from the Missouri Department of Economic Development.

Based on the funding figures for the most effective technology application programs in the nation, the State of Missouri would need to have invested \$2.2 million in fiscal year 1992 in the Manufacturing Competitiveness System. In FY 1995 a state minimum investment of \$3 million is essential to leverage federal funding sufficient to start the Manufacturing Competitiveness System. It is expected that this state investment could be leveraged by at least 3:1 through federal and private grants as well as fees for services generated by the outlets and up to 5:1 in terms of overall return to the state economy. In 1995-1999, the minimum annual state investment will be required to equal the current national per capita standard for investment in similar initiatives.

Manufacturing Competitiveness Centers are expected to become increasingly self-sufficient over time, as they develop a customer base of satisfied manufacturers who have profited from their services. Outlets must not be compelled to become 100% self-sufficient because some essential services should be provided free of charge. For example, Manufacturing Competitiveness Centers may provide a base level of services, such as assisting firms in properly defining their needs. The outlets then put the manufacturers in contact with private consultants and firms which can offer specialized expertise to meet the unique needs of the particular manufacturer.

3.2.3 Strategic Action Steps

Start-up actions will include:

- o January, 1994: Appoint a small group to facilitate development of start-up plan for the Manufacturing Competitiveness System.
- o January - February, 1994: Confirm Missouri manufacturers' needs, existing capabilities and resources in current infrastructure. Determine which current policies, strategies and programs need to be modified or clarified.
- o January - May, 1994: The Missouri Business Modernization & Technology Corporation working group develops a strategic plan for the Manufacturing Competitiveness System, with the understanding that the plan will form the basis for funding proposals to the U.S. Department of Defense's Technology Reinvestment Project.
- o January - May, 1994: Draft and pass enabling legislation to create the Manufacturing Competitiveness System as a service of the Missouri Business Modernization & Technology Corporation; possibly modify the Small Business Development Centers, the Productivity Institute and other Acts, and secure \$3 million in State of Missouri financial support for the Manufacturing Modernization System by gaining appropriations for federal matching fund account.

- o June - July, 1994: Submit proposal to Technology Reinvestment Project.
- o August - December, 1994: Win Technology Reinvestment Project funding, or rescope project without those funds. Conduct a national search to begin searching for the Vice President for Business Modernization and Technology Application. Serious candidates for final review and selection by the president when the president comes on board in September 1994. Develop contracts for system partners and develop more detailed operating plan.
- o October - December, 1994: Contract Manufacturing Competitiveness Centers with the "prototype" centers for service delivery according to clearly established performance measures, and begin delivering services.
- o January, 1995: Begin delivering services. Monitor regularly and make adjustments for continuing improvements. Measure bottom-line impacts on manufacturers. Gradually add staff.
- o 1995: Monitor performance of the centers, identify what works and what does not, and institutionalize continuous improvement within the Manufacturing Competitiveness System.
- o 1995: Expand the system.

3.3 Technology Commercialization

The Missouri Business Modernization & Technology Corporation could work with private firms and universities, the State University System and the State Legislature to increase the rate at which new technologies are moved out of the laboratory into the commercial market. Its tools will include Technology Commercialization Corporations (TCC) which specialize in moving technologies with potential commercial application from the university or research laboratories into the market place.

The main impacts of this type of mechanism will be as follows:

- o Increase the rate at which ideas move from the lab into profitable, job-creating industries by offering a competitive, market-driven technology licensing alternative;
- o Focus on moving technologies into small, high growth firms based in Missouri. This will stimulate entrepreneurial activity as well as venture capital involvement in Missouri;
- o Allow Missouri firms, universities, and researchers to earn a market rate of return from the successful commercialization of their technologies;
- o Allow Technology Commercialization Corporation investors to earn an eventual rate of return, creating incentive for further commercialization activity at very low cost to the public sector;
- o Increase the number and quality of technology based investment opportunities for Missouri venture capitalists within the state; and
- o Become the primary attraction for seed capital and early stage venture capital investment funds from national and international sources.

Existing programs such as the two incubator programs funded by State of Missouri -- the four innovation centers funded by the Missouri Business Modernization & Technology Corporation (RSMo 348.271) and the incubators funded by the Department of Economic Development through the Small Business Incubator Program (RSMo 620.495) -- could be modified so that the innovation centers and the incubators could apply to be licensed as Technology Commercialization Corporations to continue receiving state funding.

3.3.1 Organizational Structure

The Missouri Business Modernization & Technology Corporation will hire a vice-president for Technology Commercialization and Development. The vice-president will oversee Technology Commercialization Corporations (TCCs). It is anticipated that in the first two years, additional staff to oversee the TCCs may include one professional.

The Technology Commercialization Corporations will be independent, private, not-for-profit or for-profit corporations which receive a license from the Missouri Business Modernization & Technology Corporation. Their management would likely resemble that of seed and early stage venture capital partnerships. Statutory guidelines will include the following:

- o Technology Commercialization Corporations must be headquartered and maintain staffed offices in Missouri.

- o At least 30% of the equity ownership of the Technology Commercialization Corporations must be held by not-for-profit institutions in Missouri, such as university endowments, private foundations, or the Missouri Business Modernization & Technology Corporation. The remaining 70% would be held mostly by the private sector.
- o A majority of the Board of TCCs must be drawn from private sector leaders committed to technology commercialization, but at least 30% of the Board of Directors of the TCC must consist of persons principally employed by public or private universities, private foundations or other public sector institutions in Missouri.
- o Technology Commercialization Corporations which meet these requirements may negotiate right of first refusal to bid on technology available for licensing by Missouri universities or laboratories, and may be exempt for a period of up to 10 years from Missouri corporate income tax and intangibles tax on licensing and royalty income and capital gains resulting from the commercialization of technology developed or licensed in Missouri.

3.3.2 Financial Structure

The Missouri Business Modernization & Technology Corporation could establish two to four Technology Commercialization Corporations in 1995-96, and could invest up to \$400,000 in each of these corporations. The program is intended to be self supporting after 10 years or less.

- o Funds will be requested from the Missouri State Legislature to invest in two or more Technology Commercialization Corporations in 1994.
- o The Missouri Business Modernization & Technology Corporation will be a minority investor in all Technology Commercialization Corporations, leveraging its investment with private and other investment dollars at least 3:1.
- o Earnings paid on investments in Technology Commercialization Corporations can be used to help cover the Missouri Business Modernization & Technology Corporation operating costs over time. States which developed model technology commercialization programs in the 1970s were able to become self sufficient by the mid 1980s.

Missouri Innovation Centers and incubators applying to convert to TCCs will be expected to develop performance standards which establish (1) appropriate present value prices for hours worked for client firms, (2) take royalties or equity positions in client firms, and (3) reward management based on performance.

3.3.3 Strategic Action Steps

The following steps need to be taken:

- o January - May, 1994: Develop and implement a detailed operations, marketing, and financial plan with a working group of leaders from potential technology commercialization corporations and potential user firms. This working group will be a sub-group of the Missouri Business Modernization & Technology Corporation working group.

- o January - May, 1994: Draft and pass legislation enabling the incorporation of Technology Commercialization Corporations and establishing performance standards for existing innovation centers.
- o June - August, 1994: Conduct a national search to hire the Vice President for Technology Development and Commercialization.
- o Fall, 1994: Identify Technology Commercialization Corporations. Qualified applicants would include: not-for-profit organizations, private for-profit businesses, local/regional economic development organizations, and research universities. Proposals are to be submitted by a consortium of any of these organizations. Proposals should clearly demonstrate how a positive environment for entrepreneurs and small to mid-size technology based businesses will be created. Proposals will clearly define the procedures for commercializing technologies and creating a flow of superior investments either in new-starts or with existing businesses; demonstrate how quality jobs will be created and how revenue will be generated and the Corporation will become self supporting within 10 years. A national panel composed of 4-5 eminently qualified individuals will assist the Missouri Business Modernization & Technology Corporation Board in evaluating the proposals.
- o 1995: Monitor performance of the technology commercialization corporations, identify what works and what doesn't work, and institutionalize continuous incremental improvement.
- o 1995: Expand the system.

3.4 Technology Development

The Missouri Business Modernization & Technology Corporation could create a Technology Investment Fund to invest in applied research projects which have potential to generate a stream of investment-grade technologies of strategic importance to the Missouri economy. Investments by the State of Missouri in initiatives designed to create promising commercial/industrial research centers or facilities, such as the Centers for Advanced Technology and the Higher Education Research Assistance programs will also be made through the Technology Investment Fund to provide effective policy and financial oversight.

The impacts of the Technology Investment Fund will be to:

- o Create a permanent, renewable source of applied research investment funds in Missouri;
- o Be able to cover operating costs within approximately five to seven years (depending on the level of initial capitalization);
- o Provide a stream of technology-based projects which can be commercialized by the Technology Commercialization Corporations;
- o Serve as the vehicle for demonstrating effective university/industry research collaboration with market discipline and measurable commercial results; and
- o Serve as the vehicle for identifying other investment, regulatory, and policy changes that will make Missouri academia and industry a powerful, market-driven, dynamic research team by 2004.

Unlike the proposed strategic actions for technology application and technology commercialization which are implementable in 1994, this initiative would be designed from June to December 1994, for legislative enactment in 1995.

3.4.1 Organizational Structure

The St. Louis Critical Technologies Task Force provides a model for organizing the collaborative private sector, university, public sector process essential to success in technology development. This process must be organized and managed on a statewide basis.

The Vice President for Technology Development and Commercialization could manage the process on a day-to-day basis. It is anticipated that in the first two years, additional staff required to operate the Fund may include one professional.

A due diligence review will be undertaken on each applied research project. There are a number of resources in Missouri to evaluate the market and technological value of each project, and to recommend projects to the Technology Investment Fund management who will make all investment decisions. External peer review panels may be used, as in the other two strategic actions. These investments will be made on the following basis:

- o The Fund requires a private sector co-investment on applied research projects, to match other cash and in-kind investments from universities, state and federal sources at least 1:1.

- o The Fund takes a royalty or equity position in applied research projects. The Fund only invests in projects with commercial possibility on the five year horizon and revenues generated to the Fund from royalties or dividends would be (1) reinvested in the Fund for future applied research investment, and (2) used to cover management costs associated with the Fund.
- o The Fund may invest in conjunction with other federal grants programs such as the federal Small Business Innovation Research Grants program.

The responsibility for funding the existing Centers for Advanced Technology programs (except the Missouri Manufacturing Research and Training Center at the University of Missouri, Rolla which is likely to become a Manufacturing Competitiveness Center) will be transferred to the Missouri Business Modernization & Technology Corporation. The Technology Investment Fund will be responsible for setting clear performance measures for Missouri's Centers for Advanced Technology. The Higher Education Assistance Act (RSMo 173.500 to 173.565) could also be modified so that funding allocated for basic and applied research under this Act is transferred to the Technology Investment Fund.

3.4.2 Financial Structure

The Technology Investment Fund will serve as a channel for the \$1.2 million presently appropriated for the Centers for Advanced Technology. The Technology Investment Fund will seek further capitalization through federal and private foundation grants.

Based on the funding figures for the most effective technology development programs in the nation, the State of Missouri would need to have invested \$15.9 million in fiscal year 1992 in the Technology Investment Fund. Therefore, an investment of \$13 million per year by the State of Missouri for each of the next five years to create a total investment pool of \$65 million could be requested for the future technology investment funding years.

3.4.3 Strategic Action Steps

The following steps need to be taken:

- o June - December, 1994: The Missouri Business Modernization & Technology Corporation Working Group will work closely with the public and private sector universities, the St. Louis Critical Technologies Task Force, and other key private and public sector groups to create a statewide technology development effort and an Investment Fund which could also oversee the existing Missouri Centers for Advanced Technology.
- o January - May, 1995: Draft and pass legislation creating the Technology Investment Fund and possibly transfer the responsibility for the Centers for Advanced Technology programs and for Higher Education Research Assistance to the Missouri Business Modernization & Technology Corporation.
- o September - December 1995: Develop and implement a detailed operations, marketing and financial plan for the applied research program.

Section

4

4.0 STRATEGIC ACTION FOR IMPROVING MISSOURI'S FINANCIAL CAPITAL RESOURCES

4.1 The Market Need for Financial Capital in Missouri

Financial capital is a necessary but insufficient factor of production. Money can never compensate for bad management, insufficient markets, or an inadequately trained work force, inappropriate technology or inadequate infrastructure. Good money never makes a bad deal good. The absence of the right form of financial capital at the proper terms can, however, keep an otherwise sound, growing firm from achieving its full potential. Its absence can also keep an otherwise sound, promising new venture from being created.

Capital markets are more perfect than other markets, such as labor markets, and North American capital markets are the most highly perfected in the world. Nevertheless, all capital markets have some imperfections which keep them from flowing freely. As a general proposition, the newer and smaller the firm, the more novel the product or service, and the further it is from financial centers, the more likely these imperfections are to impede the flow of capital to otherwise sound, profitable enterprises.

The Market Research for this Strategic Action Plan documents a number of areas in which growing, high-performance firms in Missouri face barriers to appropriate forms of financial capital.

In order to be globally competitive, high-performance firms in Missouri need efficient access to several distinct kinds of financial capital:

- o Seed Capital is essential to finance the transition of investment grade technology from the laboratory to prototype and initial start-up. Seed capital is invested in small increments of equity (often \$250,000 to \$1 million). It is very risky since not all technologies succeed. Therefore, investors expect to earn very high returns – at least 40% compounded annual rates of return.
- o Early Stage Venture Capital follows seed capital to help finance the transition from initial start-up to profitable production and distribution. Seed and early-stage venture capital funds tend to be concentrated in Boston and California and because of the risk, the small scale of the investment, and the "hands on" nature, investors are not as likely to travel or invest in Missouri.
- o Later-Stage Venture Capital follows earlier-stage venture capital. This type of financing is used for the major expansion of existing enterprises or to finance ownership transfers, and is often invested in larger amounts. The worldwide supply of later-stage venture capital has expanded enormously within the past decade as large institutional investors have committed huge sums to this previously small specialized marketplace. As a result, venture capital partnerships grew larger and somewhat more risk adverse, as did the size and nature of individual financings which were economical for them to undertake.
- o Mezzanine Capital (sometimes called near equity) is used to finance the expansion or restructuring of smaller, slower growth firms which either cannot or do not want to "go public." It is often invested on a convertible debt instrument. Mezzanine capital is a rapidly growing, but less known alternative to venture capital. It is generally harder to find than venture capital, and can be vastly more important to the economic development of a state.

- o Subordinated Secured Loans are needed by firms which are expanding or restructuring, and which already have high levels of senior, fully secured debt. Subordinated secured loans are generally used to finance fixed assets but can also be used for working capital. Subordinated secured debt is a more flexible and higher risk form of debt financing than fully collateralized, senior debt, and therefore earns higher returns than senior debt.
- o Long-Term Loans are necessary for expansion of growing firms to finance acquisition or improvement of land, plant and equipment.

The Market Research confirms that Missouri has a strong banking system and an emerging venture capital industry. Missouri, however, lacks sufficient sources of five key types of financial capital if it is to support the rapid expansion of highly competitive firms -- (1) seed and early-stage venture capital; (2) later-stage venture capital from Missouri institutional investors; (3) mezzanine capital for the expansion of small and medium-sized enterprises; (4) low-cost, long-term fixed asset financing for small and medium-sized enterprises, as well as infrastructure at a scale equivalent to other states; and (5) improved access to commercial loans for small enterprises, especially in smaller communities.

Seed and Early-Stage Venture Capital: The absence of this critical tier of capital is reflected in the low level of start-ups. Only a small number of start-up firms are created in Missouri each year: Missouri consistently ranks low for the number of new firms created by workers. It ranked 35th in 1992 with 5.7 new firms per 1,000 workers.¹ This is especially important, since these firms are among those most likely to adopt the most advanced technologies and to develop products in new fields of technology. Furthermore, new firms, particularly those focusing on technology, have the potential to create spin-off jobs at a 4:1 ratio.

Later-Stage Venture Capital: An emerging venture capital industry is developing in Missouri, especially around St. Louis and Kansas City. Missouri has more than half a dozen venture capital firms with more than \$200 million under management. More than 140 venture capital investments in 89 companies were reported in Missouri between 1987 and 1992. This is a good and growing level of activity which can expand further to support Missouri's large manufacturing and technology base.

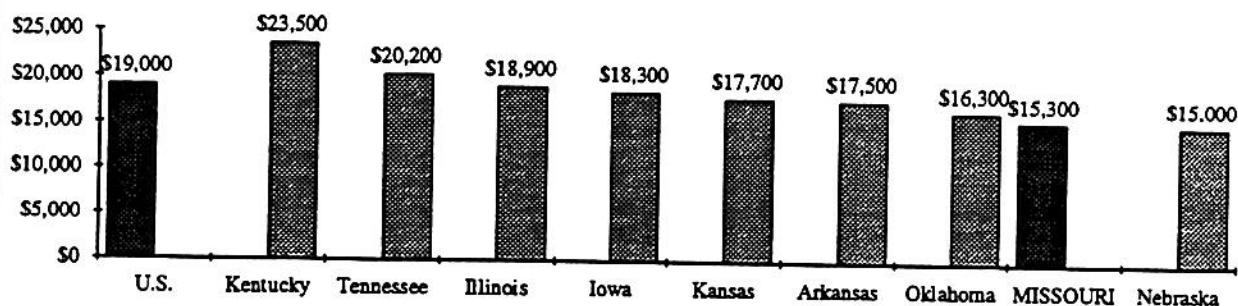
Mezzanine Capital: No mezzanine capital investment has been formally reported in Missouri by the principal data sources between 1987 and 1992. Interviews, however, indicate that some manufacturing firms have been able to secure mezzanine capital financing from investors from the east coast or California. These deals involve high transaction costs, and are not available for most Missouri companies. This form of capital will become increasingly important as small and medium-sized manufacturing firms in smaller and more remote communities aggressively upgrade their technologies, equipment and plant to compete.

Subordinated Secured Loans: The primary sources of subordinated, secured loans are federal programs. Missouri makes intensive use of federal programs such as the U.S. Small Business Administration 7(a) and 504 programs, the Farmers Home Administration Guaranteed Loan Program and the Community Development Block Grant (CDBG) programs. In fact, Missouri's 504 Certified Development Companies rank 5th in the nation for 504 loan approval activity per capita for FY 1990, 1991 and 1992. However, as successful as they are, these limited programs alone cannot meet all the subordinated, secured debt needs of Missouri manufacturers, especially in rural areas.

¹ Source: Office of Advocacy, U.S. Small Business Administration, Washington DC, 1992

Long-Term Loans: The Market Research Report emphasizes that Missouri's rate of investment in new plant and equipment is well below the national average, with Missouri ranking 47th in the nation for capital investment in Missouri firms. Capital investment per employee in Missouri's manufacturing sector was, on average, more than 19% below than the national average from 1987 to 1990.

Capital Investments Per Employee (1987 to 1990)



Source: U.S. Department of Commerce, Annual Survey of Manufacturers, 1990

To be consistent with national levels of investment and keep pace with national and international competitors, Missouri manufacturing firms would have needed to invest \$19,000 per employee as compared to actual investment of \$15,300 between 1987 and 1990. Overall, Missouri manufacturing firms would have needed to invest \$1.58 billion more to be consistent with national levels. To be able to achieve this rate of investment, Missouri small and medium-sized enterprises need to be able to have access to low-cost, long-term fixed asset financing.

(National Capital Investment per Employee - Missouri Capital Investment per Employee) * Number of Employees in Missouri =	 (\$19,000 - \$15,300) * 422,700 =
Overall Financial Gap	<u>\$1.58 billion</u>

4.1.1 Mission

The mission of the Missouri Investment Partnership is to build access to financial markets for firms essential to creating a Missouri economy characterized by better employment opportunities leading to higher wages.

The mission will be pursued through a market-driven public/private partnership that uses leadership, investment, and changes in public policy to ensure access to the most appropriate forms of finance for newly created firms and to help existing firms grow and compete.

Such a public/private partnership will be an umbrella for financial capital targeted to each kind of capital: (1) seed and early-stage venture capital; (2) venture capital; (3) mezzanine capital; (4) long-term fixed asset financing for small and medium-sized enterprises; and (5) commercial loans for small enterprises, especially in smaller communities.

4.1.2 Performance Goals

We are currently drafting a range of initial performance goals which might be used to measure the success with which Missouri's financial resources are made available to Missouri's firms. Representative goals could be:

- ✓ To increase in Missouri's rank in new business formation from 35th in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in formally reported seed capital investment from zero in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in number of large private and public institutional investors investing in venture capital as an asset class from ____ in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in amount of venture capital assets invested by large private and public institutional investors from ____ in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in formally reported mezzanine capital from zero in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in scale of tax exempt, long-term fixed asset financing for small firms from ____ in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase in taxable long-term fixed asset financing for small firms from ____ in 1992 to ____ in 1996 and ____ in 2004.
- ✓ To increase the percentage of commercial and industrial loans as a share of total bank assets from ____ in 1992 to ____ in 1996 and ____ in 2004.

4.1.3 Strategic Actions

We propose that the Missouri Investment Partnership develop four strategic actions in 1994 and early 1995:

- o **Seed and Early-Stage Venture Capital**: Create a \$30 million seed and early-stage venture capital fund to foster the creation of technology-based firms by complementing the technology commercialization strategic actions. This fund will be financed principally by private investors.
- o **Later-Stage Venture Capital**: Create a multi-million dollar pool of venture capital partnerships financed by large private and public sector institutional investors based on the highest fiduciary standards of the market place. This pool will substantially increase the availability of venture capital to high growth Missouri firms which meet the standards of the market place.
- o **Long-Term Fixed Asset Financing**: Consider evolving MEDEIB (Missouri Economic Development, Export and Infrastructure Board) into a Development Bank to help small and medium-sized manufacturers access long-term financing at favorable terms. This Development Bank will be created in partnership with Missouri private banks and existing public finance institutions.
- o **Commercial Loans for Small Enterprises**: Create a mechanism to provide financing to small businesses which cannot access any of the sources of financing addressed above, especially in smaller communities. This program will build on emerging Missouri private and public initiatives designed to have a community development impact in partnership with Missouri private banks.

In addition, the Missouri Investment Partnership will work with Missouri's financial community and with the Missouri Business Modernization & Technology Corporation to assess the demand and supply of other forms of financing such as mezzanine capital and subordinated debt and, if necessary, take initiatives to fill existing gaps between demand and supply.

Each of the key strategic actions is described in greater detail below.

4.1.4 Organizational Structure

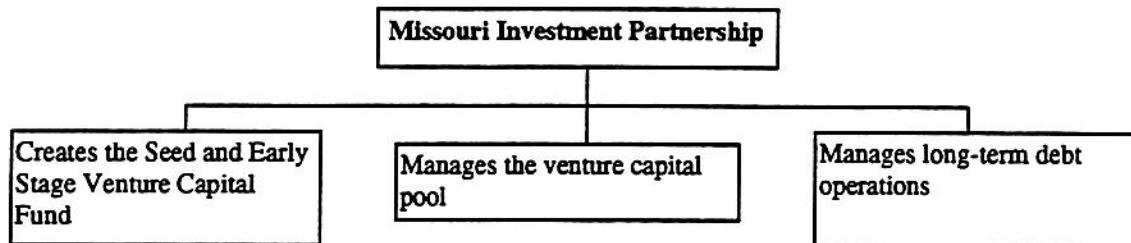
Twenty (20) years of operating experience in creating market-driven, performance-based public/private development finance institutions has led to a set of guidelines with regard to both structure and process which are more likely to ensure success. These include the following:

- o The **Board of Directors** should have the following properties:
 - The size should be small: a range somewhere between 11 and 15;
 - A clear majority of private sector leaders must be carefully chosen to include executives from key financial institutions as well as manufacturing companies and other enterprises;
 - Key cabinet secretaries, such as the Director of Economic Developments must participate;

- Senior leaders from both legislative houses and both parties need to be represented;
- The Chair is a private sector person chosen by the private sector and with the approval of the Governor; and
- o The Board of Directors should evolve out of a working group which is informally organized to develop the mission, performance goals, programs and priorities for the Missouri Investment Partnership.

Private and public sector leaders are now being identified who are committed to developing the strategic actions in each of the financial resources areas. They will form the basis for the Missouri Investment Partnership Working Group.

The Missouri Investment Partnership will hire a President through a national search to work with the Board to develop its programs. The overall structure of MIP could be as follows:



4.2 Missouri Seed Capital Fund -- Seed and Early-Stage Venture Capital

A seed and early-stage venture capital fund will be created to foster the creation of technology-based firms in Missouri to complement the technology commercialization strategic action plan. This Missouri Seed Capital Fund will be financed by private investors and will invest in technology-based, high-growth, start-up and new manufacturing firms located in Missouri and within the Kansas City and St. Louis MSAs.

The main impact of such a seed and early-stage venture capital fund will be as follows:

- o Fostering the creation of a Missouri-based seed and early-stage venture capital industry, which is an essential pre-requisite to generating the even more critical attention of the national venture capital industry to newly created firms in Missouri;
- o Providing a source of financing to the technology-based, start-up firms emerging from the Technology Commercialization Corporations.

An informal working group has emerged (including senior leadership from Missouri's principal population centers) with a strong common interest in creating one or more seed capital funds in Missouri. The Missouri Seed Capital Fund initiative is therefore most appropriately a public initiative that is principally privately capitalized.

4.2.1 Organizational Structure

The Missouri Seed Capital Fund will be a for-profit venture capital partnership whose Limited Partners are private investors, principally foundations and university endowments.

The Missouri Seed Capital Fund will be led by a managing partner with proven experience, chosen through a national search by the Limited Partners, and rewarded in accordance with venture capital industry standards. An Advisory Board of highly regarded seed capitalists from around the country may be chosen to provide management support to the managing partner on such matters as cash position, portfolio performance, current investments, future commitments, fund raising activity, deal flow and planned distributions. The President of the Missouri Investment Partnership will be a member of the Advisory Board.

4.2.2 Financial Structure

Experience from successful seed and early-stage venture capital demonstrates that a seed and early-stage venture capital fund needs to reach at least \$30 million to be able to achieve sufficient diversification in the portfolio and a reasonable risk-adjusted rate of return.

A seed and early-stage venture capital fund will have high management costs because investments in start-up and new manufacturing firms need to be monitored much more closely than later-stage venture capital investments. Venture capital managers estimate that management fees for seed and early-stage venture capital funds need to be at least three times higher than the management fees for more traditional venture capital funds.

These high management costs may need to be initially covered by a source other than the Missouri Seed Capital Fund investors. These costs might be covered partly by private foundations and partly by public sector investment. The funds invested by the private foundations and the public sector may be recoverable through royalties or a portion of the carried interest. An alternative to direct public investment in the Missouri Seed Capital Fund could be to use or modify the provisions of the Seed Capital Tax Credit (RSMo 348.300 to 348.318) which authorizes taxpayers investing in "seed capital, start-up capital and follow-up capital [...] to receive a tax credit equal to 30% of any contribution made to such fund."

4.2.3 Strategic Action Steps

The following steps need to be taken:

- o February, 1994 - June, 1994: Review and obtain preliminary commitment to the creation of the Missouri Seed Capital Fund from a group of key potential private investors.

- o February, 1994 - May, 1994: Work with private investors, with the Department of Economic Development and key legislators to review existing seed capital legislation and, if necessary, draft and pass legislation regarding management cost financing for the Missouri Seed Capital Fund.
- o July - December, 1994: Hire General Partner, complete fundraising and establish the Missouri Seed Capital Fund.

4.3 The Missouri Venture Capital Fund of Funds -- Later-Stage Venture Capital

The most effective way to meet the challenge of matching the demand for later-stage venture capital is to invest in a Fund that pools private and public institutional capital, and focuses on the venture capital industry at the national and regional level, as well as the venture capital industry in Missouri.

A multi-million dollar pool of venture capital partnerships could be developed and financed by large private and public sector institutional investors based on the highest fiduciary standards of the market place. The goal of this Fund will be to generate superior financial returns to its investors. The main impact of such a later-stage venture capital fund on the Missouri economy will be as follows:

- o To increase the access of Missouri companies which meet the standards of the market place to in-state and out-of-state venture capitalists;
- o To attract more highly respected venture capitalists to Missouri as residents and investors who are capable of serving as lead investors to bring in other venture funds to their deals;
- o To establish a more entrepreneurial environment in Missouri that will lead to more public company formations headquartered in Missouri.

4.3.1 Organizational Structure

The Fund will be overseen by a governing Board that is appointed by the fund investors and represents the private investors, the public investors, experts familiar with the venture capital industry and a representative of the Missouri Investment Partnership. The Board will insure that the Fund is consistently performance-based.

The development and oversight of the Fund will be the responsibility of the President of the Missouri Investment Partnership.

The Board and the President will be assisted by an Investment Advisory and Management Services firm selected through a Request for Proposal process. This firm will advise in choosing venture partnerships for investments and in the size of investment in each group. It will also monitor and report on performance of the Missouri Venture Capital Fund of Funds investments.

The Missouri Venture Capital Fund of Funds will invest in a diversified portfolio of top quality limited partnerships with the following characteristics:

- o The partnerships demonstrate the ability to earn a risk-adjusted return in excess of the median expected rate of return for venture capital as an asset class;
- o The partnerships have demonstrated either an existing commitment to Missouri by having participated in Missouri investments, or there is strong reason to believe they will have an interest in future Missouri activities, independent of investment by the Missouri Venture Capital Fund of Funds.

4.3.2 Financial Structure

Experience from successful venture capital pools similar to the Missouri Venture Capital Fund of Funds suggests that the Fund needs to reach at least \$50 million to be able to invest in a diversified portfolio of limited partnerships and to achieve a risk-adjusted rate of return.

Investments from public pension retirement funds could be sought, in agreement with the State Retirement Plans in Venture Capital provision (RSMo 105.687 to 105.690) which allows "the Missouri State Employee Retirement System (MOSERS), Highways and Transportation Employees' Retirement Fund, and the Highway Patrol Retirement Fund, to invest up to 5% of their assets in venture capital firms, small business investment companies provided that these small business investment companies and venture capital firms have either their principal office in Missouri or have one-half of their assets within the state."

If public sector institutional investors are asked to participate by their private sector institutional co-investors, the investments of both parties would be on the same teams.

4.3.3 Strategic Action Steps

The following steps need to be taken:

- o February, 1994 - December, 1994: Review and obtain preliminary commitment to the creation of the Missouri Venture Capital Fund of Funds from a group of key potential private and public institutional investors.
- o January, 1995 - June, 1995: Establish the Missouri Venture Capital Fund of Funds, and work toward securing commitments to capitalize the Fund from private pension funds, insurance companies, and other large institutional investors that have a major interest in the state of Missouri, as well as possibly public retirement system funds managed by the State of Missouri and local Missouri governments.
- o January, 1995 - June, 1995: Issue and review responses to a Request for Proposals to the national venture capital industry for management of the proposed Missouri Venture Capital Fund of Funds.

4.5.2 Financial Structure

The Missouri Development Bank will need to implement a credit enhancement system to be able to obtain superior term loans for Missouri's small manufacturers and thus complement existing MEDEIB programs. If a small industrial borrower in a Missouri Development Bank bond were to go into default, bond payment would be covered by Missouri Development Bank through the following sources of funds:

#1: Reserves from Bond Sales and first Mortgage on Asset

#2: Personal Guarantee from Borrower

#3: Bond Guarantee Cash Reserves (minimum one year of debt service)

#4: Access to Interest on a Trust Fund which provides Rated Credit Backing to The Missouri Development Bank

Cash reserves equal to one year of debt service would be necessary on tax-exempt financing for small manufacturers to be sold on the publicly traded markets.

- o It is estimated that a percentage of the cash reserves can be generated through fees, investment and interest income (depending on the level of initial operating support from the state of Missouri, the level of fees charged, and the level of non-guaranteed bond activity).
- o The balance would require an investment over time by the private sector. Such an investment could be treated as the "equity" which the private partners commit to the Missouri Development Bank, and which would meet commercial bank Community Reinvestment Act (CRA) guidelines.

Non-cash credit enhancement would also be necessary on tax-exempt financing for small manufacturers to be sold on the publicly-traded markets. Because it is cost-prohibitive for small firms to individually obtain a bond rating, a large private or public institution with a bond rating must lend its name based on its confidence in that borrower's ability to pay.

- o The Missouri Development Bank would have to have first call on a stream of revenues to cover defaulting bonds. Based on the experience of other models, however, the Missouri Development Bank should never actually access these dollars. Each year this stream of revenue could continue to be utilized for its existing purposes.
- o In today's regulatory market, if all commercial banks are to have access to the Missouri Development Bank and if the Missouri Development Bank bonds are to be competitively priced, such credit enhancement can only be effectively provided by a public institution.
- o The combination of privately capitalized cash reserves with public credit enhancement would enable the Missouri Development Bank to offer at least AA bond terms to small creditworthy Missouri manufacturers who might not be able to receive appropriate financing at all.

The Missouri Development Bank therefore requires investment from both the private and the public sector. Based on our experience in other states, the Missouri Development Bank should be able to cover its day-to-day operating costs within a reasonable period of time.

4.5.3 Strategic Action Steps

The following steps need to be taken:

- o February, 1994 - June, 1994: Explore preliminary commitment to the evolution of MEDEIB into the Missouri Development Bank from a group composed of MEDEIB and investors from the commercial banking industry.
- o February, 1994 - June, 1994: Work with this group from the commercial banking industry, local economic development professionals, and the Missouri Legislature to consider legislation to transform MEDEIB into the Missouri Development Bank, if this is timely and appropriate.
- o July, 1994 - December, 1994: Undertake a national search for the Investment Partnership President who will manage the Missouri Development Bank, and capitalize cash reserves of the Missouri Development Bank necessary to begin credit enhancement operations.
- o Early, 1995: Undertake a thorough training effort with commercial loan officers through the Missouri Bankers Association, and with local economic development professionals through the Missouri Department of Economic Development to create the marketing network of the Missouri Development Bank.

4.6 Commercial Loans for Small Enterprises

A specific program can be developed to target small businesses which cannot access any of the sources of financing addressed above. This program builds on emerging Missouri private and public initiatives designed to have a community development impact in partnership with Missouri private banks. It will build on three existing instruments: (1) the Missouri First program which might be modified in partnership with the Treasurer to create greater flexibility to meet legitimate private sector needs; (2) Bank Community Development Corporations (CDC) which help banks meet Community Reinvestment Act requirements; and (3) a number of micro-business lending programs in Missouri.

For example, the Missouri First program (RSMo 30.750 to 30.767) could be changed as follows: Missouri First for More Jobs enables firms to borrow \$25,000 for each job they create or save for a year. However, if a company creates more jobs than planned during this first year, the only way to obtain \$25,000 for each extra job under Missouri First is to eliminate these extra jobs at the end of the first year and re-create them during the second year. The Missouri First regulations could be changed to enable a company which created more jobs than expected to apply for extra-borrowing.

Section

5

5.0 STRATEGIC ACTION TO IMPROVE MISSOURI'S WORK FORCE

5.1 The Market Demands that Shape the Evolution of Human Resources in Missouri

Missouri's economy is nothing more or less than the sum total of the energy, imagination and resourcefulness of all of its people and the communities in which they live. To the extent that any individual in Missouri is not engaged in a livelihood that realizes his or her potential full capacity, the Missouri economy is less.

Missouri's competition, no longer to be found only in neighboring states, now spans the European markets as well as those of the Pacific Rim. The competition is fierce. One way for Missouri to stay abreast or move ahead of its competition is to support the creation and maintenance of firms that are high value-added, and globally competitive and profitable. One of the keys to establishing these types of firms is a highly qualified Missouri work force. Therefore, as the demands of a global economy require firms to adopt the philosophies of a high-performance work organization, the Missouri work force is required to perform better, which means the training and educational agencies must perform better, and so on.

Missouri's work force has remained relatively unchanged, continuing to focus on the labor-intensive skills once crucial in the past instead of providing workers with the new training they need -- basic skills in the areas of communication, setting and meeting priorities, group effectiveness, problem-solving and leadership. So, how does Missouri's work force catch up? The solution lies in a three-pronged process that looks to (1) Employers, (2) Educators, and (3) the Public Sector. All three must change and work in tandem with one another to create a Missouri work force pool that is highly skilled and trained to handle the jobs of today's work place.

Employers must change: Missouri firms must develop their workers' skills and utilize their work force according to the practices and key components that make up a high-performance work organization, benchmarking to best international practices and performances.

Educators must change: They must work toward becoming more market sensitive to make sure that they meet the demands of their market (Missouri firms/employers) in a timely fashion -- Missouri's educators must ensure that their students graduate with the skills and training that employers are seeking.

The public sector must change: It must build on education, training and state/federal initiatives to support a more market-driven, performance based educational system. Existing educational organizations focus on issues regarding students from K-12, as well as the adult training and life-long learning programs. The public sector can complete the educational scope by focusing its efforts on providing education and training opportunities to the disadvantaged/marginal work force in Missouri.

If all three work in partnership with one another, the state economy will become more market-driven, performance based, and will deliver its products and services in an efficient and timely manner. Key agencies, such as the Department of Elementary and Secondary Education and the Department of Labor and Industrial Relations will join in the process of determining the most appropriate distribution of responsibilities for training and educating the work force: K-12, high school and adult students, as well as the marginal workers.

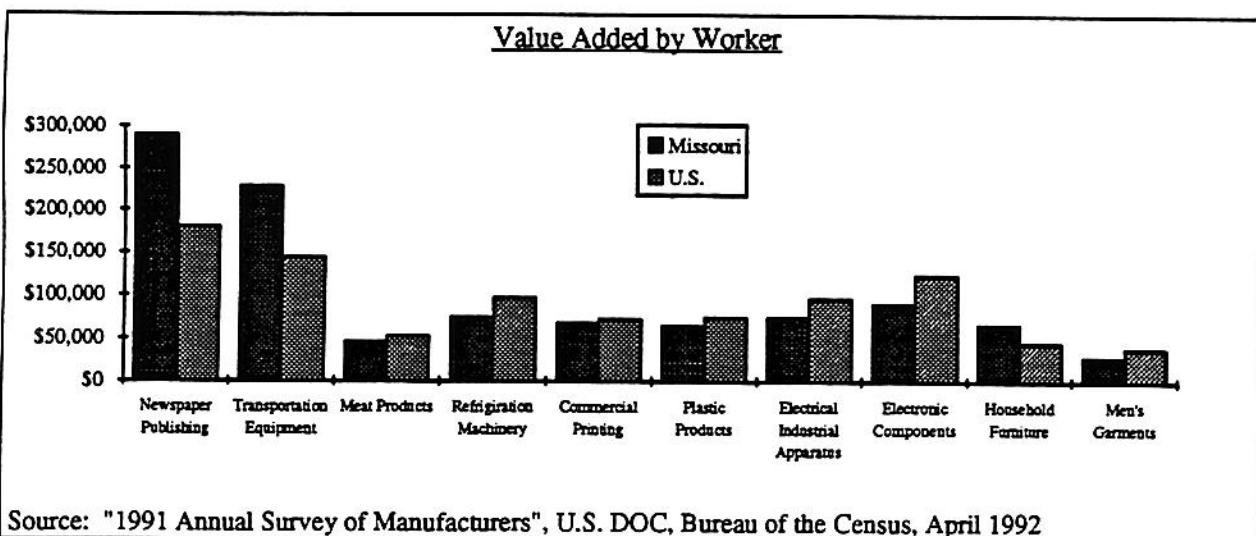
5.1.1 Change in Employers

In order for Missouri firms to compete effectively over the long-term, they must be supported by an economic and political environment that provides them with the ability to:

- (1) Constantly update the quality of their products, as well as their productivity and profitability;
- (2) Access capital at an appropriate rate and term;
- (3) Invest in their work force;
- (4) Access all appropriate forms of infrastructure: air, highway, rail, water, and telecommunications; and
- (5) Pinpoint their customers on a global basis, to receive constant electronic feedback on their customers' needs, and to respond to those needs nimbly.

Many American firms are currently operating under management philosophies and production processes that date back to the 1950s and their overall performance has begun to show the symptoms of Missouri's vulnerability: Although the average productivity of Missouri firms is 4% higher than the national average, productivity issues do exist in some traditional and high tech industries¹:

- o The productivity of Missouri firms is higher than the national average in three out of Missouri's ten top manufacturing sectors: newspaper publishing and printing (+61%), transportation equipment (+59%), and household furniture (+48%), while commercial printing remains consistent with the national average.
- o The productivity of Missouri firms is significantly lower than the national average in six other sectors: plastic products (-13%), meat products (-14%), electrical industrial apparatus (-23%), refrigeration machinery (-24%), men's garments (-26%), and electronic components (-27%).



¹ Productivity is defined as the ratio of the value added divided by the number of production workers. Calculation is based on the 1991 Survey of Manufacturers MS91(AS)-3, U.S. Department of Commerce, Bureau of the Census. Productivity is calculated at the three-digit SIC code level except for transportation equipment at the two-digit SIC code level. Confidentiality issues prevent data to be released at a more detailed level.

Among the six sectors whose productivity is lower in Missouri than at the national levels, four (all except plastic products and meat products) are sensitive to foreign competition and are at risk of losing market shares if they do not increase their productivity to reach, at a minimum, a level similar to their national competitors.

These ominous trends illustrated by Missouri's performance in terms of productivity is confirmed by its performance in terms of earnings which is, at best, average:

- o Missouri ranks 24th for personal income per capita with \$18,706 at 94.5% of the national average;
- o Missouri ranks 29th for production workers hourly wage with \$11.33;
- o Missouri ranks 23rd for average annual pay with \$22,567 at 92% of the national average.

If Missouri firms are to be internationally competitive they need to become high-performance work organizations. Each Missouri firm must:

- (1) Recognize and identify the level and nature of training needed to become a high-performance work organization.
- (2) Actively seek out training partnerships.
- (3) Change its mindset toward its employees and treat them not as an expense, but as an investment.
- (4) Recognize the firm as both a contributor and a user of the Missouri human resources pool, not an independent unit in the labor market, but rather.

Some firms are already recognizing this need. A strong indication is the telling feedback received in our Technology Surveys to over 600 firms. When asked how they would rate the importance of work force training to their competitiveness in the next three years, over 60% of the responses received rated training as either important or very important. Coincidentally, responses to a previous survey in Missouri also showed that over 60% of the employers had trouble finding skilled craft workers, technicians and professionals. However, it is important to note that although many employers see work force training directly tied to their competitiveness, the majority of firms in Missouri spend less than \$5,000 per annum on training and educating an employee.

Missouri employers are not unique. However, the reality is that most American businesses are still unaware of what their training needs are and what tools they need to survive the next 25 years. The first step for Missouri employers is to understand and define the education training needs of its work force, and then work with the educators to devise the most appropriate response toward meeting those needs.

5.1.2 Change in Educators

Missouri has a national reputation for its hard working, experienced work force. However, while this quality has served them well in the past, it alone will not support them over the next 25 years. This trend is already becoming apparent, signaling Missouri's need to re-focus its economic priorities. Missouri's public school performance is below average and this underlines the challenge that Missouri faces as it considers its new role in a globally competitive market.

- o Missouri ranked 48th in the fall of 1991 for enrollment in public elementary and secondary schools as a percent of school-age population, with 85.5%, well below the national average of

91.1%. (Note: this statistic is based on public schools only, and does not account for private/sectarian elementary and secondary schools.)

- o Missouri ranked 40th in 1992 for current expenditures for public elementary and secondary schools per pupil with 82.9% of the national average.

Even more telling are Missouri's high school graduation, college attainment and adult illiteracy rates, which are, at best, average: one-quarter of Missouri's teenagers drop out of school. Fifty-one percent (51%) of high-school graduates do not go on to post secondary education. Three out of five college freshmen will never complete a higher education degree -- These people are at risk of becoming low-skill workers in an economy that is increasing its level of high skill jobs and demanding fewer and fewer low skill jobs.

CATEGORY	1993 RANK	PERCENT
High School Graduation	32	72%
Adult Illiteracy	25	12%
College Attainment	27	21%

National trends indicate that low education attainment levels could reduce Missouri's earning power even more. A recent study has shown that whereas real wages for workers with no high-school degree decreased by 20.5% between 1979 and 1991, and wages for workers with high school degrees without higher education decreased by 11.8%, the wages of workers with college degree increased by 0.3% during the same period and those of college graduates with two years of graduate school increased by 7.8%.

The situation is further muddied by:

- (1) A mis-perception, on the part of Missourians, of what an educated/trained employee is in today's job market; and
- (2) An educational/training system that does not adequately provide students with useful skills for today's job market.

The feedback from focus groups underscores these two issues. Currently, the pervasive notion is that the only viable option for getting a decent job at a decent wage is a university education. There is also a gap between the skills and attributes perceived as needed by employers, and the skills and attributes currently being developed in the education and training organizations. Neither group is working in tandem with the other.

The mandate to educators (teachers and professors at the Universities, Community Colleges, and Voc-Tech Schools) must be to: (1) re-assess their current programs and work with the business community to insure that the programs/curriculum are appropriate and useful to the prospective employer firms; and (2) work with one another, to create an educational system that is of a high quality throughout the state of Missouri.

A working example that addresses these mandates is the "Special Schools" program which is operated out of a central office in Columbia, South Carolina. This training program focuses the need for pre-employment training and some on-the-job training to close the gap between employers and educators. It is considered one of the best programs of its type in the United States and is seen as (1) very responsive to industry needs; and (2) accessible, especially to newly expanded or locating plants.

Missouri has already begun to respond to this need for educational change through the Governor's educational mandate which moves to create a "Commission on Performance." Through its work with the State Board of Education, the Governor has jump-started the process by focusing on developing a world-class education system from K-12, which calls for requirements such as:

- ✓ Academic Performance Standards.
- ✓ Developing Curriculum Frameworks to ensure that students attain knowledge, skills and competency in the critical areas of their education underpinning career preparation.
- ✓ Implementing an Assessment System in July 1996. This section is particularly important, because it drives at the heart of change that needs to come about in the academic sector. The measures are based on a student's capacity in "problem solving and analytical ability, evaluation, creativity and application ability...and shall be performance-based to identify what students know as well as what they are able to do".

In our view, Missouri needs to take a more holistic and comprehensive approach to work force needs, and spring board off of the Governor's education initiative. The approach should be directed to include the following long-term goals.

- 1) An effective system of school-to-work preparation and transition:
 - (a) Directly to work.
 - (b) Career preparation (Voc/Tech).
 - (c) Professional education.
- 2) Market-driven adult training:
 - (a) Training and re-training by employers.
 - (b) Training and re-training outside the workplace.
 - (c) Employability of the marginal work force.

However, it is crucial to note that regardless of the efforts undertaken by the academic organizations, the final lift must be supported by the private sector. Even if Missouri is able to achieve dramatic improvements in education and training, it will be to no avail if Missouri firms cling to outmoded management philosophies of the past.

While Senate Bill No. 380 begins to address the training and education needs of K-12, Missouri has also taken steps in relation to the employability of the marginal work force. The Missouri Training and Employment Council established the Work Force Preparation Task force to devise a comprehensive employment and training system that incorporates all the elements of the statewide training and employment policy. They have developed an implementation plan which was approved on December 10, 1993 by the Training and Employment Council, and is currently submitted to the administration and the legislature for their activation. Their implementation plan begins to address the issues highlighted throughout the Work Force Section of this Strategic Action Plan, and includes specific objectives and actions that can be taken with regards to the disadvantaged/marginal work force.

5.1.3 Change in the Public Sector

As mentioned from the beginning, the public sector also plays a primary role in the development of Missouri's workers. While Missouri's universities, community colleges and voc-tech schools work alongside the private sector to become more responsive to the educational/training needs of K-12, school-to-work training programs and adult training/re-training programs, the public sector is best equipped to immediately respond to the needs of the dislocated/disadvantaged sector of the work force.

Thus far, the delivery of these training and employment services in the U.S. has not been effective. This problem has been recognized by the current administration and has spawned the understanding of the need for consistency in the delivery of services and information from the state/federal programs to the workers. As detailed in the Clinton Administration's Proposal for Worker Security²:

"In recent years, rapidly-evolving technologies, defense down-sizing, corporate restructuring, and intensifying global competition, have expanded the scale of job loss, job change, and job uncertainty. Unfortunately the current government programs and structure in place to address job transitions and unemployment are no longer efficient in helping people find first, new, or better jobs. The current system was designed to meet the needs of an era when people could easily get to or move from one job to another with very little down time spent unemployed. Or, if they were laid-off, the system could provide a safety net until they got their old jobs back. In today's changing economy, the typical 18-year old will change work many times in a life-time, even if he or she stays with the same company" — an increasing number of Americans are in transition.

Many Americans face the challenge of longer unemployment spells, under-employment, or are in search of a first job. The challenge to the public sector is to help people who are unemployed move quickly back to economic security by offering them the choice to choose the services they want and need, and ensure the effectiveness of this delivery system. This can only be achieved by holding providers accountable for their results.

Unfortunately, the current system for training and re-training of the marginal work force is not working well. The state of Missouri invests heavily in publicly-funded training programs. It spends \$2 billion in state tax dollars annually, and close to \$5 billion from all sources of funds on a variety of work force preparation programs, and welfare-to-work programs. However, because of the lack of cohesion and integration of the delivery of the services provided by the federal/state programs, the system continues to be ineffective and confusing to those who need it most. The Clinton Administration's Proposal for Worker Security effectively identifies that:

- 1) There is a lack of a Comprehensive Worker Adjustment System.
 - o The system is confusing for those seeking assistance. The current employment and training system offers at least five major programs for dislocated workers. Each has a distinct set of eligibility criteria and provides a different set of services and benefits.

² Source: The Urgent Need for a National Work Force Strategy: The Clinton Administration's Proposal for Worker Security, U.S. Department of Labor, November 1993.

- o Job search assistance and re-training are not available to all who need it. While some workers who lose their jobs because of trade, defense conversion or the Clean Air Act, are eligible for training, most others are not. Even in cases where training is provided, workers can only stay in short-term training (which is often not as effective as long-term training), because income assistance is often not available.
- 2) There is a lack of an effective network of job, career, and training information
 - o Most workers looking for a next job are left to grope for answers without much reliable information about which occupations are growing, declining, as well as what skill are required, or whether their current skills are in demand. The current sources of information workers can use to help make career and job choices are not easily accessible, nor are they user-friendly.
- 3) The Unemployment Insurance Benefits Program needs to be reformed.
 - o The primary government response for displaced workers has been to provide income support through unemployment insurance. While this support helps millions of workers, particularly those who are temporarily laid-off, it does little to identify those people early who are permanently laid-off, nor does it quickly link these people with re-employment services.
 - o The current extended benefits (EB) program does not effectively respond to economic downturns. States with high-unemployment fail to trigger on the program.
 - o Permanently unemployed workers do not receive unemployment insurance (UI) benefits long enough to allow them to undertake long-term training or re-employment assistance intended to help them find new or better jobs.³

The feedback from the Focus Groups underscores the conclusions of the Proposal for Worker Security, indicating that members of both the educational and private sectors are confused and frustrated and reluctant to work with the existing public structures simply because the system is not user-friendly. The survey results tell a similar story about Missouri employers, many of whom do not regard public institutions that serve Missouri's work force needs as a resource. A large margin of firms prefer private training providers (trade associations, consultants or equipment vendors) over public ones and consistently give public institutions and programs lower performance grades.

To make the public system effective in Missouri, it has to be changed, building on the objectives outlined in the Clinton Administration's Proposal for Worker Security. A key component of this proposal is to streamline the delivery system to provide quick and easy access to the array of enhanced career development and labor market information services through the development of a uniformed information network. By developing such a network in Missouri, workers would be able to go to any designated office in the state that deals with re-employment training and welfare-to-work programs and get the training and job information that they need.

³ Source: The Urgent Need for a National Work Force Strategy: The Clinton Administration's Proposal for Worker Security, U.S. Department of Labor, November 1993.

Some key features of this type of initiative would be: ⁴	
A single comprehensive employment system	Providing for comprehensive services for all people, whether they are unemployed, under-employed, or in search of a first job.
Re-employment services	Targeting people who needed assistance in finding new and better jobs quickly.
Better, consistent information	Helping workers make better informed career and job choices, with their training/re-training programs based on the needs of the market.
User-friendly	Creating streamlined access routes to these services, and providing universal assistance to all.

Understandably, these are not issues that are solved quickly or easily. However, the drive to bring the public sector on-line with the needs of the market must be implemented. This effort should work in tandem with the activities outlined in the Draft Implementation Plan developed by the Work Force Task Force of the Missouri Training and Employment Council, particularly those objectives designed for Retraining Displaced Employees. Such objectives include: (1) Working with employers in declining industries to provide earlier access to information on workers' needs for re-training, (2) Developing a work group composed of ... state agencies and federal agencies to prepare proposals for streamlining delivery and increasing quality of re-training services for dislocated workers.⁵

5.2 Human Resources: Mission

Missouri will have a highly skilled work force that underpins Missouri firms being globally competitive. This will involve:

- I. Upgrading and fully utilizing the existing work force to international standards.
- II. Creating a market-driven educational and training system.
- III. Garnering private sector commitment, investment, and participation in a joint public/private approach to human capital development.
- IV. Creating a supportive business environment for employment creation.

⁴ Source: The Urgent Need for a National Work Force Strategy: The Clinton Administration's Proposal for Worker Security, U.S. Department of Labor, November 1993.

⁵ Source: Statewide Training and Employment Policy: Implementation Plan, Missouri Training and Employment Council, December 1993. (Draft Version)

5.3 Human Resources: Performance Goals

This Strategic Action Plan lays out the process by which Missouri can begin to address its work force issues. In proposing a preliminary mission statement, we also include beginning performance goals (for say, 2010) by which Missouri can gauge the nature and extent of its challenge and toward which it can direct its approach:

- Performance Goal #1 High-performance work organizations become the norm, not the exception.
- Performance Goal #2 25% of Missouri work force entrants (excluding university graduates) will be competency certified (certificate, diploma, associate degree, etc.).
- Performance Goal #3 Missouri high school graduates rank in the top quartile of states in terms of national standards of achievement.
- Performance Goal #4 Missouri's high school graduation rate is at 90%.
- Performance Goal #5 Missouri's employers as a group will commit at least 1% of payroll to training its workers.
- Performance Goal #6 Missouri's marginal work force will have a relatively low (quartile of best performing states) repetition rate of participation in federal/state employment and training programs.
- Performance Goal #7 There will be a perception that Missouri's work force is a comparative advantage, not a disadvantage.

Given that the Strategic Action Plan provides the seeding of the human resource effort, we are including a preliminary work schedule for the Working Group.

5.4 Human Resources: Strategic Actions

There have been several recent reports with multiple recommendations that we believe constitute an excellent basis for Missouri to move forward in responding to the work force challenge. They reflect the difficulty, complexity and multi-dimensional nature of this challenge and the response to it. We identify in particular *Jobs for Missouri's Future*⁶ and the Missouri Employment and Training Council *Statewide Training and Employment Policy Implementation Plan (draft)*⁷. The thrust of these reports is appropriate and their recommendations should be carefully reviewed.

Mindful of these reports, the following constitutes the key focus areas that are particularly important from a work force and economic development perspective. We recommend that Missouri:

- (1) Develop a World-Class Basic Education System
- (2) Develop an Effective System of School-to-Work Transition
- (3) Develop a Market-Driven Adult Training System

⁶ Source: The Missouri Challenge: Making Missouri Work, Jobs for Missouri's Future, January 1991

⁷ Source: Statewide Training and Employment Policy (draft), Missouri Training and Employment Council Work Force Preparation Task Force, December 1993.

(4) Develop Missouri Firms as High-Performance Work Organizations (HPWO), Adopting Human Resource Practices Utilized by such an organization.

These overarching objectives will be supported by one or several strategic actions that are submitted here as possible options for review and discussion.

5.4.1 Developing a World-Class Basic Education System

The future economic competitiveness of Missouri is clearly linked to how well the education system prepares individuals for entry into the work force and for life-long learning. In today's rapidly changing workplace, more is required of employees than the traditional criteria of "work ethic" and a "strong back."

The Governor has initiated the effort of education reform. Future Missouri high school graduates will master such elements as communication skills, critical thinking, problem solving, foundations of mathematics and science, and international awareness. Reform will therefore affect the core curriculum, integration, assessment, and active learning among other things. Our focus only targets those specific aspects that are crucial to Missouri having an appropriately skilled work force in the next century.

Strategic Action #1:
Explore alternative paths for University and Career/Preparatory Technical Education and Training

There could be two alternative paths of study in high school, preparing students for post secondary study in either university or career/technical training. These paths would need to be sufficiently flexible that a student could change from one path to the other.

Students who undertook the university preparatory path would complete the requirements for university entry.

Students who elect the career/technical preparation path would complete a prescribed curriculum which includes applied academic and technology courses. This path would be the foundation for:

- Youth apprenticeships programs;
- Tech-prep programs; and
- High-school graduates who have the capacity to undertake on-the-job training and subsequent re-training commensurate with advancing technology in the work place, even if they have not entered post-secondary training.

5.4.2 Developing an Effective System of School-to-Work Transition

In establishing an effective school-to-work transition program the following issues should be explored: (1) Motivate youth to stay in school and prepare them for the world of work; (2) enable students to achieve their academic potential; (3) enable students to understand the importance of learning the skills needed in the work place; and (4) develop life-long learning habits so continued employment follows initial employment. A next step might be to consider the formation of a partnership among employers and educators.

Strategic Action #1:

Building on Youth
Apprenticeship Programs

The possibility of significantly expanding the Youth Apprenticeship Program should be considered in terms of its ability to provide more high school students with the opportunity for structured entry to the work place. The principles underlying this integrated work-based and school-based learning approach are well-established. Steps that might be taken to underpin a significant expansion include:

- (a) A strong business sector commitment to providing input on curriculum, setting standards, providing workplace training opportunities and future employment;
- (b) A supporting infrastructure that includes industry, organized labor, government, high schools and post-secondary institutions; and
- (c) A systematic cultivation among youth that apprenticeship constitutes a rewarding option for career development.

Strategic Action #2:

Building on Tech Prep Programs

Tech-Prep is the concept of education which embraces a continuation of learning and the acquisition of technical skills through levels of education. Such programs are structured on a 2+2 basis involving two years of high school study and two years of post-secondary study, leading to a certificate/diploma/associate degree qualification.

In our view, Tech-Prep should be examined as a viable resource of the Missouri career preparation system. To ensure quality and consistency, this option should be universal throughout Missouri under a coordinated statewide system. In considering the scope of this program, consideration should be given to developing a regional consortia based on the 17 community colleges which might include strong linkages among area high schools, community colleges, vocational schools, businesses, and communities.

5.4.3 Developing a Market-Driven Adult Training System

The following strategic actions are proposed for consideration when working to systematically upgrade the skills of Missouri's adult work force.

Strategic Action #1:

Designing an effective employment and training system for publicly funded programs aimed at the marginal work force

The Missouri Training and Employment Council has developed an implementation plan to provide greater coordination and effectiveness of federal/state employment and training services.

The recommendations of this implementation plan are sound and should be considered for implementation. If the objectives of this plan were to be considered, we believe that the improvement arising from this, though significant, will not reach desired effectiveness without considering:

- (a) The "streamlined intake and assessment system" being part of a local level, unified client delivery and management system based on a case management approach;
- (b) the "user friendly" approach being based on the one-stop service concept; and
- (c) the private sector being involved in a meaningful manner.

Strategic Action #2:

Fostering Employer-Provided Training

Like their U.S. counterparts, Missouri employers do not spend sufficient resources on the training of their employees. They see their employees as an expense, rather than an asset in which to invest, and see themselves as an autonomous unit in the state labor market, rather than as a contributing user of a Missouri labor pool. They are unlikely to change their behavior voluntarily.

Consequently consideration should be given to approaches that would influence this behavior. The following initiatives have been undertaken in other states and can be reviewed for their suitability to Missouri:

- (a) A tax "give back" program that levies a training tax on businesses equal to one percent (1%) of their annual payroll, refundable to firms that invest in training;
- (b) A tax credit program for qualified training investments, aimed at small and medium-sized firms and non-manager training.⁸

Strategic Action #3:

Fostering Regional Business-Education Alliances

"Missouri must build a regional capacity to grapple with the many regional issues influencing work force skills training and upgrading."⁹ We believe that this important objective might be met by linking community colleges and vocational schools with regional clusters of firms. These clusters could be built on common training needs. Regional post-secondary institutions could interface with such clusters to jointly provide scheduled and customized training that meet those needs. Ideally, such alliances should be self-funded, but may need an initial funding impetus from the state.

5.4.4 Developing Missouri Firms as High-Performance Work Organizations

The following strategic action is submitted to move Missouri firms toward becoming high-performance work organizations, and especially adopting human resource practices consistent with the concept of an HPWO.

Strategic Action #1:

Benchmarking "Best Practices" of Human Resources Management

American firms are learning that the traditional Taylor/Ford philosophy of management based on hierarchical structure and top-down control of employees is no longer effective. The flaws of this approach are well documented in MITs *Made in America*¹⁰.

⁸ Source: The Missouri Challenge: Making Missouri Work, Jobs for Missouri's Future, January 1991

⁹ Source: The Missouri Challenge: Making Missouri Work, Jobs for Missouri's Future, January 1991, Pp. 24

¹⁰ Source: Made in America: Regaining the Productive Edge, Michael L. Dertouzos, Richard K. Lester, Robert M.

Fortunately, significant changes are occurring in the way American enterprises are being managed, including worker empowerment, self-managed teams, and commitment to quality. These have significant implications for human resource development and utilization.

There is a compelling need to understand the human resource management implications of the high-performance work organization firms for education and training, as well as the barriers and problems associated with firms seeking transition to this approach. More specifically, there is a need to "benchmark" the best practices of Missouri HPWO firms and to facilitate change in this direction by Missouri firms. For example: what are the mathematics needs of workers relating to statistical process control and technological innovation? The following recommendations begin the process of developing the appropriate response to such questions:

- (1) "Best practices" of work force investment and management could be benchmarked on a dynamic basis and publicized on a targeted basis to Missouri industry;
- (2) Technical assistance programs like MAMTC could be encouraged to network with training providers to link human resource development with technological innovation; and
- (3) Large Missouri firms could be encouraged to bring "best practices" to the notice of suppliers, and to support change in supplier firms.

5.5 Human Resources: Organizational Structure

The first step toward accomplishing the mission, performance goals, and strategic actions described above would be to establish a Human Resources Working Group.

The HR Working Group would be responsible for ensuring that the work force challenge facing Missouri is approached in a strategic, holistic and coordinated manner, and that the approach is compatible and consistent with the broader Missouri strategy for economic development. It would also assume responsibility for challenging and supporting the Missouri private sector to adopt the value-added, globally oriented, high-performance work organization concept and to adapt human resource practices accordingly.

Because of the significance, outright challenge, and sometimes intractability of the dimensions involved, the HR Group should look to the Missouri Training and Employment Council (MTEC) to drive the effort in addressing the issues on service delivery to the disadvantaged/marginal work force (see Section 5.1.3). Together the HR Working Group and MTEC would work to formulate and drive collaborative strategies with respect to:

- A. Education, career preparation, and transition to the workplace (formal education and training) – Missouri has a shortage of skilled workers in key economic base jobs because there is a mismatch

between educators and employers as to what skills and training is needed in the current workplace. The HR Group will facilitate the process toward a solid partnership between the educators and employers of Missouri to develop a more market-oriented, output-driven educational system that prepares workers for jobs in the 1990s and the 21st century.

B. Training and employability of the marginal work force (federal and state programs for the disadvantaged) -- Currently the array of services being targeted to assist this part of the work force is fragmented and not user-friendly. The HR Working Group will explore the process of creating a One-Stop Career Center to create a smoother access route for those workers who need these services.

The challenge facing these mechanisms is not to substitute for agency functions and responsibilities, but rather to garner, leverage, influence and promote degrees of effectiveness and achievement toward compelling goals that might be otherwise beyond reach through "business as usual."

The MTEC has already appointed its Work Force Task Force, and the HR Working Group will choose its members during the first six months of 1994. The individual mandates of each will be completed in time for presentation to the 1995 Legislative Session.

5.6 Human Resources: Strategic Goals -- 1994

The Human Resources Working Group will adhere to the following work schedule to accomplish specific strategic actions during the course of 1994. The intended goal will be to develop a detailed plan for addressing the issues outlined in the Market Research Report. The strategic actions will be ready for submittal to the 1995 Legislative Session.

The primary tasks of the Working Group will be to facilitate the key private, public and education leadership to determine and influence the long-term goals indicated above. The group will also address how it can support, in the interim, the education and training initiatives already underway.

- #1: The first step will be to develop the strategic process and determine specific goals and outcomes that will be achieved by the HR Group. Once the overall process is established and accepted, the next steps should be to:
- #2: Explore mechanisms to fund and foster existing worker training at a much higher level than currently exists;
- #3: Foster working links between state and local agencies and the private sector to build on state initiatives and ensure seamless integration with local education and training services and employment and business development efforts; and
- #4: Hold regional summits around the state to build the awareness and capacity of business, education and labor to take the lead in education, training and work force policy discussions on a regional basis.

Please note that these strategic actions are subject to review and change by the HR Working Group. They must make the final decision as to determining their own working order of battle.

Section

6

6.0 STRATEGIC ACTION TO IMPROVE MISSOURI'S INFRASTRUCTURE RESOURCES

6.1 Missouri's Infrastructure Must Become Part of the Economic Development Process

Just as investment in production capital has a tremendous influence on productivity and income growth in the economy, so too does infrastructure. By some estimates, the decrease in the rate of investment in public infrastructure in the United States since the mid 1960s has resulted in a slowdown in productivity growth in the United States. Of the 1.4 percentage point decline in the growth of labor productivity between 1969 and 1987, 1.1 percentage points are due to the decline in the rate of growth in the public capital/labor ratio (that is the amount of public infrastructure per worker). This ratio, which grew at an average annual rate of 2.9 percent from 1948-1969, did not increase at all during the 1969-87 period.¹ By contrast, Japan has increased annual expenditures on public works tremendously over the last three decades, from \$1.8 billion annually in 1965 to \$52.7 billion annually by 1970.

Physical infrastructure and amenities play a key role on the evolution of productivity. Some components of the infrastructure, such as mass transit systems, urban housing, and sewage systems systems are also crucial to attracting and keeping the employees that businesses need to be competitive.

Traditional infrastructure such as roads, rail, water and airways remain as critical as ever, and environmental standards are dramatically altering approaches and investment needs in all of these infrastructure areas. They must be constantly maintained and upgraded if Missouri firms, workers and communities are to have access to the resources they need to compete today. The new technologies that have moved the entire world out of the Industrial Age into the Information Age, however, require new infrastructures. State-of-the-art telecommunications are becoming an especially important form of infrastructure to high-performance firms, workers and communities. The electronic highway is not a cliché. Two-way interactive fiber optic, cable and cellular telecommunications make every rural town accessible to Information Age jobs, and every person in every home potentially accessible to the paid labor force.

Because of the short time frame of this study, we have depended upon the large number of recent infrastructure analyses by the Missouri Highway and Transportation Department, the Missouri Transportation and Development Council, the greater Kansas City Chamber of Commerce, members of the St. Louis Committee for Civic Progress, the Missouri Public Service Commission, private sector firms, and others to begin to frame the issues for strategic action.

These studies confirm that Missouri's location, great rivers, and historic investment in roads, water and airports has provided a unique competitive advantage to Missouri firms. These factors give Missouri a comparative advantage as a major distribution center on a national and international level, which continues to benefit Missouri's agriculture and food industry, manufacturing and business service firms.

These studies, however, also underline needs to update and further strengthen Missouri's existing infrastructure, especially for highway, rail, mass transit systems, sewage systems and telecommunications in order to be an effective competitor. With the passage of the North America Free Trade Agreement (NAFTA), Missouri's strategic geographical location makes it imperative to enhance the various transportation infrastructure systems. This would enable Missouri to further reach both the national and the international markets.

¹ Source: "Why has Productivity Growth Declined? Productivity and Public Investment." Alicia H. Munnell, New England Economic Review Jan/Feb 1990, Federal Reserve of New England, Boston, MA., 1990.

The Missouri Highway and Transportation Department has prepared a comprehensive 15-Year Program for all means of transportation (passenger rail, freight rail, waterways, aviation, intermodal/public transportation, road and bridge) both to properly maintain and expand the existing network to support the development of the Missouri economy. Funding problems are likely for at least two components of the Missouri's transportation network because of the decrease of Federal government investment in infrastructure.

- o Proposition A was passed in 1987 to increase road user fees to finance the Missouri road building program. In spite of this initiative, unfunded road and bridge needs for the period 1990-2000 total \$5.5 billion.⁷ Two regions of Missouri are especially sensitive to delay in the upgrading of the road system: the St. Louis MSA whose growth in population has not been matched by an equivalent development of its infrastructure, and the Branson area whose rapid development is putting strains on the road network.
- o The future of Missouri railroad network is threatened by the diminishing appropriations of the federally-funded Local Rail Freight Assistance (LRFA) program. Planning activity for local rail projects has already been severely curtailed. Railroad service is of primary importance for some businesses, especially those involved in bulk commodities such as coal or grain. The cost of switching from railroad transportation to alternative means of transportation, such as trucking needs, needs to be carefully evaluated before any decision is made. Twenty-three states, among them five of Missouri neighboring states (Oklahoma, Tennessee, Kentucky, Illinois, Iowa) have made the decision to develop their own state rail assistance programs to make up for the decrease in federal funding.

The Missouri Highway and Transportation Department 15-Year Program has been complemented by a number of regional studies. For instance:

- o The Greater Chamber of Commerce of Kansas City prepared a report in June 1993 on the deferred maintenance of surface transportation infrastructure⁸. This report estimates the new capital improvements backlog at \$854 million for the state of Missouri. The report also underlines that "the ways to begin to solve the problem [of infrastructure maintenance] ... require courageous public leadership supported vigorously by the business community and private citizens groups."
- o The Sverdrup Corporation prepared a 20-year infrastructure program for Civic Progress covering the St. Louis area in 1991. This report involves highways and bridges, transit, railroad, aviation, waterways, water supply and waste disposal. The total 20-year estimated cost is \$19.7 billion.

Missouri also has a beginning network of local and regional organizations focused on infrastructure issues. For example,

- o The Missouri Transportation and Development Council (MTD) was formed in 1972, a non-profit organization of private citizens, public officials, companies and associations committed to raising the public and political awareness necessary to gain support for transportation needs. MTD is composed of ten district organizations.

⁷ Source: 15 Year (1992-2007) Road and Bridge Program, Missouri Highway and Transportation Department, January 1992

⁸ Source: Report of the Deferred Maintenance Subcommittee of the Surface Transportation Committee of the Greater Kansas City Chamber of Commerce, June 1993

- o The Missouri Highway Corridor Coalition was created in 1991 to focus and magnify the effort of individual organizations representing the communities along the highway Corridors in Missouri. It is composed of 17 Local Corridor organizations which try to influence the timing and type of highways serving their communities.

As described above, these various institutions which are involved in infrastructure issues need to be brought together so that Missourians share an overall long-term agreement on priorities for strategic investment in infrastructure for economic development purposes, both at the local level and at the state level.

6.1.2 Missouri Needs to Recognize the Importance of State-of-the-Art Telecommunications

As mentioned above, Missouri needs to recognize that state-of-the-art telecommunications are an especially important form of infrastructure to high-performance firms, workers and communities. Many states and nations are radically reforming their tax, regulatory and public investment strategies to encourage this new infrastructure. For instance, state rate of return regulations for telephone companies to protect consumers may unintentionally provide disincentives for these companies to aggressively modernize their network because they are unable to appropriately adjust prices and rates of depreciation. The best state practices develop public policies to stimulate rigorous private competition and investment for the benefit of the customer in reduced cost, higher quality and easier access.

Missouri has started addressing these issues in the past few years. The Public Service Commission formed the Telecommunications Project Team in 1990 to advise the Commission on the modernization of local telecommunications networks and incentive regulations of local exchange companies. The Project Team delivered its report: *"Network Modernization and Incentive Regulation"* in August 1991. In addition, House Bill 566, which was adopted in 1993 by the General Assembly also extended Missouri's tax credits to inter-exchange telecommunications companies, facilities and revenue-producing enterprises (which provide telecommunication products and services as well as information systems products and services) to help upgrade Missouri's telecommunications network.

Missouri, however, has no overall plan yet to bring itself to a state-of-the-art level. Only Southwestern Bell was planning to replace all its electromechanical switches by the end of 1992 and to eliminate multiparty service by 1997. To be able to develop the most advanced services necessary for Missouri firms to compete in the Information Age, and to keep pace with its more advanced neighboring states such as Nebraska, Kentucky and Tennessee, Missouri needs:

- o First, to upgrade its network to achieve the minimum level defined in the Code of States Regulation for Telecommunications Service (CRS 240-32.100). Achieving this minimum level will be necessary to develop the most advanced telecommunications services;
- o Secondly, to start planning for the next stage of telecommunications development. Missouri has the opportunity to build upon the initiatives that already exist in the field. For instance, Southwestern Bell has developed a proposal -- TeleFuture 2 -- to create a digital fiber optic telecommunication link to every community served by the company in Missouri. This advanced network will connect schools and hospitals to offer access to Distance Learning and Telemedicine. Even if this plan will not directly affect Missouri's manufacturing base, it will lay the basis for further development. An Interactive Video Programming Advisory Committee has also been formed to provide assistance and guidance to schools.

6.1.3 Missouri Needs to Have the Financial Tools to Finance Infrastructure

A number of programs are available for local communities to finance their local infrastructure and improve their business environment:

- o The Missouri Economic Development, Export and Infrastructure Board (MEDEIB: RSMo 100.250 to 200.298) provides public infrastructure financing through long term loans such as the Infrastructure Facilities Revenue Bond Program, the Missouri Infrastructure Development Opportunities Commission (MIDOC) Loan Program, the State Building Lease Revenue Bonds.
- o MEDEIB also manages the Infrastructure Financing Fund which grants a 50% credit against taxes to contributors. It is used to make low-interest or interest free loans, loan guarantees, or grants to local political subdivisions or state agencies for infrastructure development.
- o Community Development Block Grants (CDBG) are available for infrastructure programs. Communities of less than 50,000 and counties under 200,000 can obtain up to \$500,000 for improvements to essential public facilities through the Public Facility Improvement and the Neighborhood Revitalization Program. Grants for up to \$200,000 are also available for downtown revitalization. Industrial Infrastructure Grants provide up to \$500,000 for industry-oriented programs.
- o Three specialized programs exists to help improve Missouri's infrastructure. The Port Authorities Act (RSMo 68.010 to 68.070) authorizes the establishment of port authorities. The Multipurpose Water Resources Act (RSMo 256.435 to 256.445) authorizes bond issuance to finance plans to maintain adequate public water supplies. The Environmental Improvement and Energy Resources Authority (RSMo 260.005 to 260.125) offers financial assistance for plans to conserve air, land and water resources as well as develop energy resources.

The effectiveness of the infrastructure financing tools is doubtful. The two funding programs managed by MEDEIB are actually rarely used because the potential users find the regulatory requirements of these programs inconvenient. Missouri municipalities do not benefit from the financial expertise, credibility and capabilities provided by a statewide bond-issuing agency, as their counterparts can in some other states.

A number of federal programs are available to finance infrastructure investments. Missouri laws sometimes prevent optimal use of these programs. For example, more than \$540 million in grants and \$800 million in loan guarantee have been made available by the Rural Utility Services Act to rural cooperatives. Missouri laws, however, limit cooperatives to operating electricity facilities and prevent the Rural Utility Services funds from being used for other utilities.

In conclusion, Missouri needs to devise new financing tools to upgrade and improve its infrastructure both at the state and at the local level.

6.2 Mission

The Missouri Strategic Action Plan should ensure that every Missouri community has the opportunity to build 21st century infrastructure systems essential to business start-up and expansion. This will involve:

- o Creating a single statewide partnership of private and public interests which set integrated priorities for public investment in air, road, rail, water management and telecommunications. These public investment priorities are then periodically up-dated through an annual report on the overall quality of Missouri infrastructure from an economic development perspective;
- o Constructing a network of information networks (data, voice and video combined) to connect all potential users: firms, schools, universities, hospitals, households, etc.;
- o Providing assistance to rural and urban Missouri communities to improve their infrastructure and integrate 21st century information technologies into their day-to-day business activities;
- o Providing the bridge financing to help fill in local infrastructure plans. This issue needs to be addressed in conjunction with the Missouri Investment Partnership actions.

6.3 Performance Goals

This Strategic Action Plan lays out the process by which Missouri can begin to address its infrastructure issues. Here are beginning performance goals:

Performance Goal #1 Establish an integrated statewide set of infrastructure priorities in 1994.

Performance Goal #2 Establish the goal for the number of counties which have access within three years to advanced information technology services such as interactive video and Internet in 1994.

Performance Goal #3 Establish the goal for the number of communities developing infrastructure improvement plans and/or information technology promotion plans in 1994

Performance Goal #4 Implement legislation in 1995, which institutionalizes this goal setting process in Missouri..

6.4 Organizational Structure

The first step toward accomplishing the mission and goals described above would to establish an Infrastructure Working Group with key private and public sector leaders representing utilities, banks, the Public Service Commission, the Department of Transportation, local communities and other private and public organizations involved in infrastructure issues. This Working Group will begin to create a single statewide partnership of private and public interests to set integrated priorities for public investment in air, road, rail, water management and telecommunications.

The primary tasks of the Working Group will be to provide an opportunity for key private and public leadership to determine and influence the long-term goals for infrastructure issues through recommendations to the relevant institutions such as the Public Service Commission and the Department of Transportation. The group will also address how it can support, in the interim, the infrastructure initiatives already underway.

The Infrastructure Working Group would be responsible for developing a detailed plan for addressing the issues outlined in the Market Research Report. More specifically, the Working Group will be responsible for:

- o Confirming that the four components of Missouri's infrastructure which need to be addressed in priority are (1) the road transportation system, (2) sewage treatment facilities, (3) telecommunications; and (4) the railroad network;
- o Developing a Missouri Agenda to complement federal initiatives and funding in each of the four areas. For example, the Missouri Information Infrastructure agenda needs to complement the National Information Infrastructure Agenda for Action, the federal initiative for developing the national "electronic highways". The five Infrastructure Agendas will define goals for each of the four infrastructure areas and the actions necessary to achieve these goals including changes in the Missouri Statutes. These actions could include, for example, the creation of a Missouri Rail Assistance program, changes in telecommunications regulations and the creation of new financial tools to implement local infrastructure improvement plans;
- o Developing a self assessment system for communities to evaluate their infrastructure requirements, including the information infrastructure.

6.5 Financial Structure

The Infrastructure Working Group may not initially require any funding provided that administrative support for its work can be provided by the Missouri Department of Economic Development. As it works progresses, the working group will need to be able to access funding to move to implementation.

6.6 Strategic Action Steps

The following steps need to be taken:

- o January - February, 1993: Establish the Infrastructure Working Group.
- o February - May, 1994: Work on the specific goals and outcomes that will be achieved by the Infrastructure working group and create sub-groups to work on the five key components of infrastructure.
- o June - December, 1994: Develop a Missouri Agenda to complement federal initiatives and funding in each of the four areas: set priorities, define regulatory changes and organizations which need to be implemented;
- o January - May, 1995: Draft and pass necessary legislation to implement the Missouri Infrastructure Agendas.

Section

7

SECTION 7.0

THE HIGH COST OF COMPETITIVENESS: THE NEED FOR COMMUNITY DEVELOPMENT

THIS SECTION TO BE INCLUDED IN NEXT DRAFT

Section

8

SECTION 8.0

STRATEGIC ACTION TO IMPROVE MISSOURI'S MARKETING STRATEGY

THIS SECTION TO BE INCLUDED IN NEXT DRAFT

Section

9

9.0 STRATEGIC ACTION TO MANAGE MISSOURI'S ECONOMIC DEVELOPMENT

Successful Missouri Strategic Action can be measured by the wealth and high-quality jobs generated by a specific time in the future. Successful Missouri Strategic Action creates:

- ✓ A Mindset for change;
- ✓ A Vision for the future;
- ✓ A clear set of Action Steps to realize that vision; and
- ✓ The Institutional Structure to manage Missouri's Strategic Action so that Measurable Wealth and High-Quality Jobs are created.

This final chapter describes the institutional structure necessary to manage this Strategic Plan. Successful economic development management must fulfill four requirements if it is to be successful in a world of decreased public resources and increased global competition:

- 1) Public sector resources must be leveraged by private sector resources;
- 2) These private and public resources must reach a scale large enough to make a measurable difference;
- 3) Continuity of strategic direction must be assured over time; and
- 4) Managers of public as well as private sector funds need to be held accountable to performance-based outcomes.

These requirements demonstrate the fact that both the private sector and the public sector are essential to the success of economic development efforts:

- The public sector needs to create policies, mechanisms and institutions to carry out Strategic Action. The main public sector actor in Missouri is the Department of Economic Development (DED). It is not, however, the only actor. A number of other departments, agencies and public sector organizations have a significant impact on economic development through their tax, expenditure and regulatory policies. These activities need to be coordinated to accomplish Strategic Action.
- The private sector is the engine of the Missouri economy. The private sector, therefore, needs to join the public sector in identifying structural economic changes that require public action and eliminating the barriers that prevent the creation and growth of businesses. The private sector demonstrates the soundness of the Strategic Action Plan by choosing to invest in key initiatives. Their involvement helps to ensure soundness by providing continuity from Administration to Administration and by insisting that all managers are accountable on a performance basis.

For these reasons, proper management of economic development needs to answer two questions:

- 1) How can the Department of Economic Development be organized to fulfill its role in implementing this Strategic Action Plan?
- 2) How can key public sector and private sector actors work together to make sure that their efforts and initiatives complement one another and lead to successful strategic outcomes?

9.1 Missouri Department of Economic Development

Recognizing the geographic and cultural diversity of this state, Missouri needs one central public sector economic development agency for the state to manage or coordinate all economic development activity. The Missouri Department of Economic Development is the logical agency to ensure that Strategic Action pays off in wealth and job creation, and to coordinate the development activities of state government. Conversely, the diversity of Missouri requires a new means of reorganizing sub-state regional differences, such as the regional offices of DED authorized in HB 566 in 1993.

More than a decade of experience has led to a fundamental change in how a number of states have decided to manage their Departments of Economic Development.

Historically, state legislatures have:

- o Authorized specific functions, divisions, offices and programs to direct the activities of the department;
- o Budgeted specific line items for such inputs as staff positions by title, job description and salary; equipment and supplies; offices, etc.;
- o Required central purchasing; and
- o Provided only for civil service positions.

Since 1984, a number of state statutes have taken a more strategic approach, often as a part of an overall strategic planning process. In this newer approach, the authorizing statute defines the Department strategically:

- o Section I. Defines the Strategic Market Need to be addressed by the Department and often provides for the annual market research update of Strategic Action. This annual update takes place within a planning time frame usually longer than a single gubernatorial term (such as five years). The overall Strategic Action Plan is then periodically updated.
- o Section II. Defines a Mission for the Department.
- o Section III. Spells out a small number of Objectives that lead to performance goals which measure outcomes such as income, wealth and quality job creation, and not inputs such as staff, supplies and equipment.
- o Section IV. Describes the process by which the Director develops an Annual Business Plan which gives the Director the flexibility to employ management and budget to carry out the

statutory mission and objectives without specific statutory direction as to what programs, policies, divisions, staffing and line item budgets are to be implemented. The legislature ensures its control through review, modification and approval of the Director's Annual Business Plan and Program Budget.

- o Section V. Describes the process by which the Director develops a Program Budget to carry out the Business Plan.
- o Section VI. Describes the development of an Annual Report Card which measures and reports performance in employing the Business Plan and Program Budget.

The Governor's Commission on Management and Productivity is addressing state administration from a perspective similar to that outlined in this chapter. This section outlines operational experience drawn from other states as it specifically relates to the management of economic development.

9.1.1 Mission

The Missouri Department of Economic Development could be guided by a brief, clear mission statement. The mission statement of DED could be:

to expand the capacity of Missouri firms, workers and communities to grow, diversify and compete in global markets in order to create and retain quality jobs in a healthy environment.

The Department's mission should be legislatively mandated. However, DED management must be given broad flexibility to respond to structural economic changes and opportunities on a year-to-year basis. Other states have authorized department legislation which includes:

- o Only the overall DED mission statement and not any specific statutory provisions for divisions or functions; and
- o No more than a few specific objectives so as not to restrict the specific activities or functions of the Department in the face of a rapidly changing economic environment.

9.1.2 Objectives

Although its mission should be precise, the Department of Economic Development should be allowed flexibility to carry out these objectives.

DED's legislation could, for example, contain the following specific statutory objectives:

- 1) To expand existing Missouri firms which capitalize on Missouri's comparative economic advantages by producing value-added, export-oriented goods, processes and services;
- 2) To create new Missouri firms which provide value-added products and can benefit from Missouri's comparative economic advantages;
- 3) To help modernize Missouri firms so that they can compete effectively in global, national and regional markets;

- 4) To attract firms in growth sectors which would prosper in Missouri because they benefit from the state's special economic strengths;
- 5) To engage all sectors -- private and public, local and state -- in an integrated Missouri strategic action effort to create wealth and quality jobs throughout the state;
- 6) To ensure that all firms, workers and communities in the state have the capacity to access the high quality resources they need to compete in today's global economy.

9.1.3 Business Plan and Management Structure

The Director of the Department of Economic Development could be directed statutorily to develop an annual Department Business Plan as the first order of business to carry out the objectives listed above. The Business Plan would include milestones which spell out the specific objectives for the Department, and would define how each proposed division, function and activity is clearly related to achieving the Department's mission and objectives. These divisional missions and objectives then form the basis for the program budgeting process. This process will define the funding needs for each division and a system of program standards and procedures by which each division will be held accountable to the Legislature for carrying out its function.

Management structure would also not be mandated in DED legislation, but would instead be presented by the Director in each annual Business Plan. Management structure cannot insure success but it can help to promote it. Management structure must attract and encourage outstanding and aggressive leadership with the skills of the private market and the perspective of the public sector. Because many of the powers and duties of the Department involve working closely with the private sector, certain employee positions of the Department could be governed, classified and compensated in a manner that compares equally to similar positions in the private sector. Therefore, in the annual Business Plan, the Director could be asked to list, describe and justify all such positions and their compensation, and place them in an unclassified status, exempt from civil service. Certain positions within the Department may be most effectively designed with incentive pay tied to performance standards that in turn relate back to the Department's economic development objectives.

Support staff might remain classified, although it is important to recognize that secretaries and receptionists are the first impression that a business enterprise considering expansion or location in Missouri may receive. Quality of support staff is just as important to the professionalism of DED as is its management.

In summary, the DED management could be constructed around the following basic principles:

- o Establish measurable performance standards;
- o Establish a personnel system that rewards staff performance in meeting DED objectives and creates more flexible job positions.
- o Make management salaries competitive with those in local government and the private sector.
- o Give managers broad salary flexibility for agency personnel and the freedom to hire and fire people, and consolidate positions where appropriate.
- o Give managers authority to eliminate positions and acquire services by contract.

- o Develop management systems which locate decision making close to the customer.
- o Emphasize team management. Consider funding the team unit, then allowing the team to decide how to invest its resources in the best interest of the state and the customer.
- o Develop bonus systems that reflect the above principles.
- o Develop a broad range of other management tools to recognize and reward employees who excel. (Some departments, for instance, give the best parking spot to the employee of the month, with her or his name on it.)

Because the Missouri Department of Economic Development began as a department responsible for administering a broad array of private sector regulatory boards (banks, savings and loans, credit unions, utilities, and professional certification from accountants to veterinarians) as well as independent commissions or councils (the arts, housing finance, and some forms of bond financing), there are special issues of management and organizations that require attention:

- o Some states have chosen to separate these two functions into two departments -- one for economic development, another for regulation;
- o Other states have recognized that these regulatory functions provide unique opportunities to remove barriers to private sector activity essential to economic development. Removing these barriers is critical to leveraging the private and public investment essential to effective strategic action. Some states have been particularly effective in:
 - ✓ Leveraging financial capital;
 - ✓ Leveraging telecommunications investment; and
 - ✓ Creating very substantial direct public utility investment in local and state economic development activities.
- o Many states which have recognized the importance of removing regulatory barriers to development have also taken sound steps to simplify the myriad of commissions, councils and boards which often dilute effective coordination and clear executive accountability.

These steps have included:

- 1) Creating a single financial industry regulatory institution;
- 2) Creating a single bond financing agency with substantial capacity for private sector leverage and with clear performance accountability to strategic objectives;
- 3) Encouraging public institutional sources of long-term capital to invest prudently in alternative asset categories on the same terms as comparable private institutional investing;
- 4) Establishing clear guidelines for reinvestment by telecommunication companies in state-of-the-art equipment which create public benefit;

- 5) Permitting public utilities to invest a portion of their rate base directly in local and state economic development; and
- 6) Ensuring that all of these bodies have managements which have executive accountability even if some form of policy board oversees the activity.

States have used the strategic action process to review and adopt these kinds of management and organizational changes.

A final organizational consequence of strategic action should be increased coordination among executive agencies with economic development functions (such as education, work force training and infrastructure) that are not within the Department of Economic Development. Experience provides a number of lessons:

- ✓ It is difficult for one cabinet agency to coordinate another;
- ✓ Experiments with umbrella Economic Development Cabinets have tended not to be effective;
- ✓ To date, the most effective mechanism devised is a strong private/public partnership such as that outlined below in Section 9.3. Such a partnership can bring all key cabinet officers and educators into regular strategic decision-making, with the Governor leading a strong bipartisan private sector majority;
- ✓ Strategic Action is compromised with the presence of too many commissions, boards and councils; and
- ✓ A Private/Public Partnership to manage strategic planning should not be created if it is just another board. It must be elevated to a standing equal to that of the Board of Regents in most states.

9.1.4 Program Budget and Financial Structure

If the Department of Economic Development is to be soundly managed, it must have sufficiently large, long-term, stable and consistent funding to be able to achieve its strategic purposes. Three techniques can establish this level of consistency:

First, neighboring states which have adopted private/public partnerships to oversee strategic action have consistently experienced growth in Department of Economic Development functions and resources to address priority strategic actions. These partnerships become bipartisan private sector advocates for substantial, long-term public investment in performance-based economic development.

Second, program budgeting developed in partnership with a legislature leads to growing, stable, long-term budgets. Specific guidelines for the Department's program budget will undertake to:

- o Eliminate line-item budgets. Fund the function, not line-items, such as computers, maintenance, and paper clips. Focus on outcomes, not the micro-management of inputs. Let the agency manage itself. Measure and reward performance, and the result will be a satisfied customer.
- o Define tax dollars as investments, not one-time expenditures. Measure the return on those investments against expected returns.

- o Introduce greater management flexibility to transfer and carry forward funds in return for legislative oversight of performance outcomes. The Director could be permitted to keep 50% of the savings achieved by the end of the fiscal year. These savings could be reinvested under the next year's Business Plan over and above baseline budgeting for increased management productivity -- i.e., software, specialized training, bonuses, etc.

Third, the technique of fiscal rate of return should be used where possible to measure whether or not the benefits of investments in Missouri firms, local organizations or communities equal or exceed the cost of its investment. To the extent that the Legislature's investment of funds in the Department leads to investments which, in turn, generate jobs and profits which increase the Missouri tax base and/or reduce social overhead costs, the investments have been wise. Fiscal rate of return has the elegance of not only insuring that the Department of Economic Development is true to its mission and is market-sensitive (avoiding wasteful spending), but that it seeks the highest fiscal rate of return so that it will make investments that will have the largest economic impact on the Missouri economy.

This concept of fiscal rate of return is tied to one of the most important innovations in HB 566 of 1993, Section 33.282, the inclusion of a Tax Expenditure Budget in conjunction with the state budget. Other states have included formulas for fiscal rate of return as a precondition to tax credits authorized for economic development.

9.2 A Public/Private Partnership

The public sector and the private sector already work together on economic issues in Missouri. The Business Council provides guidance and oversight to the Department of Economic Development for the development of the Strategic Action Plan. Some economic development institutions such as the Missouri Economic Development Export and Infrastructure Board and Missouri's Training and Employment Council have Boards whose members largely represent private sector leadership. We recommend that this collaboration be progressively extended and improved to encompass most economic development actions. We make this recommendation only if it is accompanied by (1) a consolidation in the existing plethora of boards and commissions under clear executive accountability; and (2) that the initial level of bipartisan private sector appointments is widely recognized as establishing instant credibility in all sectors and constituencies.

Again, the reasons for this high level collaboration are to bring:

- ✓ Private Sector investment to leverage public sector investment;
- ✓ Private Sector discipline to the investment;
- ✓ Private Sector management standards to the initiative; and
- ✓ Private Sector continuity to the initiative.

We suggest a three-step order to this collaboration in 1994:

- o The first step would be to create public/private working groups to start implementing the Strategic Actions for each of the Strategic Action areas.

- o The second step would be to institutionalize this public/private collaboration by creating institutions managed jointly by the public and the private sectors. We suggest beginning with:
 - ✓ The Missouri Business Modernization and Technology Corporation for technology; and
 - ✓ The Missouri Investment Partnership for financial capital.

Each would operate under a performance contract to the Department.

- o The third step would be to bring the overall management of economic development under an umbrella institution where the private and public sectors would develop an integrated approach to economic development in all areas: technology, financial capital, human resources, infrastructure, community development, marketing, etc.

This Partnership would:

- ✓ Oversee the technology and financial capital initiatives as subsidiary corporations;
- ✓ Operate under a performance contract with the Department;
- ✓ Focus only on the development of globally competitive, high-performance Missouri firms that generate high value-added jobs; and
- ✓ Only assume those specific functions that the Governor, Department Director, and Legislature determine to be essential to its mission.

9.2.1 First Step: Working Groups

In addressing each of the issues in the main economic development areas, the next step is to create a working group for each economic focus area. These working groups will further refine and implement the Strategic Action Plan. These working groups must be:

- ✓ Small in number;
- ✓ Small in size;
- ✓ Very senior level; and
- ✓ In close touch with each other.

Each group will include members of the Business Council, working in partnership with a small number of key leaders drawn from the private sector, the public sector, the Legislature, and educational institutions. The groups will, in turn, decide the most effective process toward implementing the Strategic Actions.

As with any other effort, these groups must be held accountable for their actions and will report regularly to the Director of Economic Development and the Business Council.

9.2.2 Step 2: Specialized Public/Private Partnerships

Two of the working groups -- the Technology Working Group and the Financial Capital Working Group -- will pave the way for the creation of two private/public partnerships -- the Missouri Business Modernization and Technology Corporation, and the Missouri Investment Partnership.

9.2.3 Step 3: Umbrella Partnership

The Strategic Actions described in this Strategic Action Plan are part of an overall Missouri development strategy. Several examples illustrate how Strategic Actions in different economic areas are dependent on one another:

- o Technology commercialization initiatives need to be complemented by seed capital if they are to be successful at creating new technology-based firms.
- o Technology initiatives to improve the productivity and competitiveness of existing small and medium-sized Missouri manufacturing firms will require corresponding initiatives to improve the capacity of the work force to employ the technology.
- o Communities which want to improve their infrastructure to create a healthy environment for businesses need financing tools to finance local infrastructure investments.
- o Easily accessible telecommunications will improve access to technology and work force training.

If Missouri is to have a successful development strategy, it needs a mechanism to (1) integrate all the initiatives in a coherent strategic vision; (2) stabilize the policy for the long haul; (3) ensure market discipline and flexibility; and (4) leverage resources to a scale necessary to create substantial wealth and quality jobs throughout the state. This mechanism could be an Umbrella Public/Private Partnership.

The Umbrella Partnership's Mission could focus on supporting globally competitive, high-performance firms which create measurable wealth and high-quality jobs in a healthy environment.

Strategic Actions: To carry out this mission, the Umbrella Partnership would implement strategic initiatives in each of the key development areas which the Governor, the Department Director and the Legislature agree should be contracted to the Partnership through the Department. The Partnership would focus Missouri's scarce resources to maximize market-driven efficiency by integrating Missouri's management of strategic action. All areas would work in tandem with one another to lift the state economy to a more globally competitive level.

Organizational Structure: The Umbrella Partnership could be a private, not-for-profit statewide corporation created by the Governor, statewide bipartisan private sector leadership and Missouri legislative leadership. The Private/Public Partnership's Board of Directors could be structured as follows:

- o Chaired by the Governor
- o Co-chaired by a private sector leader chosen by private sector members
- o Composed of:
 - ✓ A private sector CEO majority

- ✓ Key legislative leaders
- ✓ Private and public university leaders
- ✓ Private and public local leaders

Again, the Partnership should only be created if the level of participants is seen as insuring a successful outcome.

Management: A small, lean, professional management team would be chosen through a national search. The management team would be paid competitive market compensation and will be rewarded on a performance basis.

The Umbrella Partnership could deliver resources through expert private and public sector contractors who are prepared to operate on performance-based contracts: for example the Missouri Business Modernization and Technology Corporation for technology services and the Missouri Investment Partnership for financial capital. The Umbrella Partnership would, in turn, operate under a performance contract with DED.

The Umbrella Partnership might also contract eventually with the Department of Economic Development to manage some of the economic development programs currently operated by the Department so long as there was mutual agreement that this would be more efficient in attending to the needs of high-performance firms.